STAFF NURSE PERCEPTIONS' OF NURSE MANAGER CARING BEHAVIORS: PSYCHOMETRIC TESTING OF THE CARING ASSESSMENT TOOL – ADMINISTRATION (CAT-ADM©)

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DEDICATION

In Memory of my mother Margaret “Peggy” Lucille Wiseman Sayler.

November 29, 1933 – February 21, 1983

My mother never got to see me become a nurse. I think she would be proud and I am sure she is watching from heaven.

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Cheryl Lynn Wolverton

STAFF NURSES' PERCEPTIONS OF NURSE MANAGER CARING BEHAVIORS: PSYCHOMETRIC TESTING OF THE CARING ASSESSMENT TOOL – ADMINISTRATION (CAT-ADM©)

Caring relationships established between nurse managers and staff nurses promote positive work environments. However, research about staff nurses' perceptions of nurse manager caring behaviors is limited. A 94-item Caring Assessment Tool-Administration (CAT-adm©) was developed to measure staff nurses' perceptions of nurse managers' caring behaviors; however, it lacked robust psychometric testing. This study was undertaken to establish the CAT-adm© survey as a reliable and valid tool to measure staff nurses' perceptions of nurse managers' caring behaviors.

The Quality-Caring Model® (QCM®) served as the theoretical framework. Specific aims were to 1) evaluate construct validity of the CAT-adm© survey by describing factors that account for variance in staff nurses' perceptions of nurse manager caring, 2) estimate internal consistency, and 3) conduct item reduction analysis. Four research questions were: 1) Will the factor structure of observed data fit an 8-factor solution? 2) What is the internal consistency reliability of the CAT- adm©? 3) What items can be reduced while maintaining an acceptable factor structure? and 4) What are staff nurses' perceptions of nurse manager caring behaviors?

A cross-sectional descriptive design was used. A sample of 703 staff nurses from Midwestern, Midatlantic and Southern Regions of the U.S. completed the CAT-adm© survey electronically. Analysis included Confirmatory Factor Analysis (CFA), Exploratory Factor Analysis (EFA), univariate analysis, and descriptive statistics. CFA did not support an 8-factor solution. EFA supported a two-factor solution and

demonstrated significant shared variance between the two factors. This shared variance supported a one-factor solution that could conceptually be labeled *Caring Behaviors*. Random selection reduced the scale to 25-items while maintaining a Cronbach's Alpha of .98. Using the new 25-item scale, the composite score mean of staff nurses' perceptions of nurse manager caring behaviors indicated a moderately high level of caring. Suggestions for nursing administration, nurse manager practice, leadership, education and for future research were given.

The new 25-item CAT-adm© survey has acceptable reliability and validity. The 25-item CAT-adm© survey provides hospital administrators, nurse managers, and researchers with an instrument to collect valuable information about the caring behaviors used by nurse managers in relationship with staff nurses.

Sue Lasiter, PhD, RN, Chair

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CHAPTER ONE

THE NATURE OF THE STUDY

Introduction

Current acute care systems are complex, chaotic, and rapidly changing. Never before has there been more uncertainty in the healthcare environment than in the 21st century (Huston, 2008). This uncertainty stems from the nearly complete restructuring of healthcare in America, which has placed immense pressure on leaders of acute care organizations to make changes that affect employees within all levels of the organization (HealthCare.gov). Among the many challenges, leaders must work to keep their institutions financially viable, which often requires difficult and unpopular decisions related to reorganization, consolidation and elimination of services, and reduction of the work force. Balancing the demands of fiscal management and, at the same time, providing effective leadership to employees is difficult in times of uncertainty (Bunker & Wakefield, 2004) and, more often than not, priority is given to financial needs of the institution over the needs of employees.

Inattention to employee's needs adds additional strain to an already stressed organization plagued by change and growing complexity that adversely affects the work environment. Progressively, nurses have been experiencing change in the nature of their work due to inadequate staffing and caring for sicker patients with fewer resources. These changes, coupled with administrative focus on fiscal affairs, can frustrate nurses which often leads to job dissatisfaction, burnout, fatigue, anxiety, and inability to provide the quality of care expected (Shirey & Fisher, 2008) or desired. Consequences of work related frustration and an unhealthy work environment are associated with excessive

absences and the intention to resign which further adds to the problem of an unstable workforce (Force, 2005; Hayes et al., 2006; Shirey, 2006a).

There is considerable agreement in the literature about the relationships between a healthy work environment and nurses' satisfaction, professional empowerment, and staff nurse retention (Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Duffield, Roche, Blay, & Stasa, 2011; Force, 2005; Hayes et al., 2006; Kleinman, 2004; Kramer et al., 2007; Laschinger, Almost, & Tuer-Hodes, 2003; Schmalenberg & Kramer, 2009; Shirey & Fisher, 2008). Cara et al. (2011) suggested that a supportive and caring work environment (Shirey & Fisher, 2008) could be created by a positive relationship between nurse managers and staff nurses. One promising retention strategy has been to create and sustain a healthy work environment by expanding the relational role of the nurse manager (Schmalenberg & Kramer, 2008, 2009; Shirey, 2006a; Shirey, Ebright, & McDaniel, 2008).

A positive nurse manager-staff nurse relationship supports the idea that nurses who feel cared for by their managers are more motivated to develop caring relationships with patients (Cara, Nyberg, & Brousseau, 2011). Feeling cared for is a positive emotion that staff nurses experience when managers apply caring behaviors in their relationships with staff nurses. Caring behaviors are instrumental and expressive behaviors that, when used in the context of shared professional interactions, facilitate understanding, learning, comfort, human dignity, security, self-confidence, hope, and encouragement (Duffy, 2013). Examples of behaviors used by managers that demonstrate caring are listening, being accessible, being encouraging, maintaining safe working environments, and

offering support to the staff. Duffy believes that when staff nurses feel cared for positive patient, nurse, and system outcomes occur (Duffy, 2013).

Building and sustaining positive nurse manager-staff nurse relationships requires the development of nurse manager relational skills including knowing the importance of the use of caring behaviors (Duffy, 2013; Longo, 2011). It is vital for nurse managers to have relational skills that incorporate caring behaviors that reflect professional nurse values. Inattention to such relationships poses serious threats to creating and sustaining a healthy work environment (Duffy, 2013; Shirey & Fisher, 2008).

Research about staff nurses' perceptions of nurse managers' caring behaviors is limited. The Caring Assessment Tool-administration (CAT-adm© survey) was developed by Duffy (Watson, 2009) and, since its development in 1997, had not undergone full psychometric testing (Duffy, 2013). The current study was designed to determine if the CAT-adm© survey was a reliable and valid instrument to measure the concept of nurse manager caring behaviors. If so, the instrument would provide researchers with a way to collect valuable information about nurse mangers' caring behaviors that could ultimately lead to interventions that enhance nurse manager behaviors and positively influence staff nurse retention, satisfaction, and the quality of patient care.

Purpose Statement

The purpose of this study was to evaluate the validity and reliability of the CAT-adm© survey. Three specific aims were to: 1) Evaluate construct validity of the CAT-adm© survey by describing the factors that account for variance in staff nurses' perceptions of nurse manager caring behaviors, 2) estimate the internal consistency, and 3) conduct item reduction analysis to reduce administrative and participant burden.

Research Questions

The following four research questions guided this study:

1. Will the factor structure of the observed data fit an 8-factor solution?
2. What is the internal consistency reliability of the CAT- adm© survey?
3. What subset of items will maintain an acceptable factor structure?
4. What are staff nurses' perceptions of nurse manager caring behaviors?

Theoretical Framework

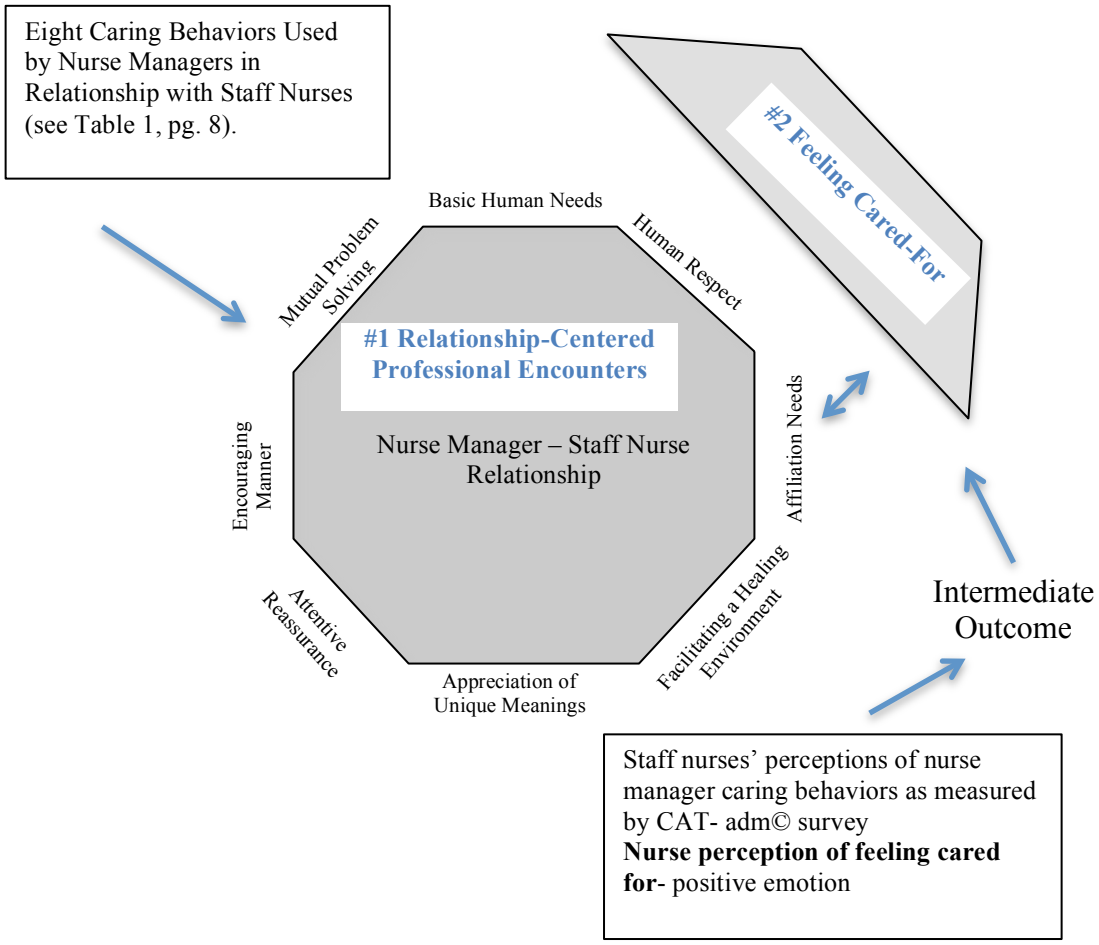
The Quality-Caring Model® (Duffy, 2013) was used to guide this study. The Quality-Caring Model® (QCM®) is a middle-range theory originally described as a blended model with major concepts related to quality and caring (Duffy & Hoskins, 2003). Duffy and Hoskins (2003) described quality as a continuous, dynamic process of learning and improvement. They also described caring as a process that is part of the relational aspect of human beings. Caring, a seminal aspect of nursing practice, can be expressed daily through the attitudes, behaviors, and skills of professional nurses and their managers. Quality and caring work synergistically together to advance individuals and health systems through continuous development (Duffy, 2013).

More recently, revision of the QCM® has been influenced by increased complexities of the healthcare system and other sociological consequences (Duffy, 2013). Relational nursing theorists such as Irvine, King, Mitchell, Nightingale, and Watson (Irvine, Sidani, & Hall; King, 1981; Mitchell, Ferketich, & Jennings, 1998; Nightingale, 2008; Watson, 1997) along with complexity science have influenced further development of Duffy's model (Burns, 2001; Holden, 2005; Mckeon, Oswaks, & Cunningham, 2006). The importance of human interactions in which nurses recognize unique aspects of

individuals in need of health care, their attributes and preferences, and their abilities to make their own health care decisions have been the impetus for the QCM® revisions. In the revised model, quality and caring are considered dynamic processes that constantly adapt to the complexities of healthcare systems. The new model, therefore, is non-linear and can be influenced by constantly changing environmental factors (e.g. human interactions, leadership) that generate feedback thereby creating continuous change. As a result of these human interactions, nurses are able to put themselves in another's context and choose appropriate responses in a caring manner for the patient.

Four concepts depicted in the QCM® (Duffy, 2013) are 1) humans in relationship, 2) relationship-centered professional encounters, 3) feeling cared for, and 4) self-advancing systems. In the ensuing section, each of the four concepts is defined and their relevance to this study is discussed (see the QCM® in Appendix A). The four concepts in the QCM® are described as they apply to the nurse manager-staff nurse relationship and the intended outcome of staff nurses feeling cared for by their manager. In Figure 1, a conceptual adaption of the QCM® is presented. Two of the four model concepts most pertinent to this study are relationship-centered professional encounters and feeling cared for. These are shaded in the conceptual model in Figure 1 to emphasize their importance to the nurse manager-staff nurse relationship.

Figure 1. Conceptual Model Used in this Study -Adaption of Duffy's Quality Caring Model®



Humans in Relationship

Humans in relationship is a concept that incorporates individuals' unique aspects (wholeness) through relationships (Duffy, 2013). The term wholeness is used to describe the individual's beliefs, attitudes, behaviors, physical attributes, and life experiences. Human relationships serve as the foundation of the QCM®. Duffy includes four relationships that healthcare providers (HCP) must be aware of and nurture in order to develop caring relationships. These relationships are (a) relating to self, (b) relating with patient/family, (c) relating among healthcare team, and (d) relating to community. Of

these relationships, relating to self and relating among the healthcare team are most pertinent to this study. Relating to self involves understanding one's own relationship-to-self or self-caring and is important because to know one's self (self-knowing) enables a person to engage in self-reflection which helps build the capacity to care for others. Understanding another's situation conveys caring. Relating among the healthcare team (e.g. nurses, physicians, patient, and family members) is important to the attainment of self, patient, and system outcomes.

The caring relationship between the nurse manager and staff nurse is often compromised by chaotic work environment. Nurse managers are caught between trying to meet the financial needs of the organization and meeting the needs of staff nurses. This dilemma, coupled with the individual healthcare providers' unique characteristics (psychosciocultural, spiritual, and life experiences), may affect their performance and their ability to develop caring relationships with others.

Relationship-Centered Professional Encounters

Relationship-centered professional encounters involve the utilization of caring behaviors in relationship with others. Characteristics of relationship-centered professional encounters include specific caring factors (Duffy, 2013) such as mutual problem solving, attentive reassurance, human respect, encouraging manner, appreciation of unique meanings, healing environment, affiliation needs, and basic human needs. The professional encounter of interest in this study is the interaction that occurs between the nurse manager and the staff nurse. When nurse managers use caring factors in their relationships with staff nurses, their actions create caring relationships.

Using caring factors in relationship with staff nurses shifts the nurse manager's actions from simply acts of "doing" (performing his or her job) to "being with" and "being present with" (Duffy, 2013, pp. 51-51) the nurse. Being present requires time spent on focused listening, showing, teaching, problem-solving, and counseling; all of which are behaviors that enable the nurse manager-staff nurse relationship to flourish. Caring factors are often delivered together and when delivered consistently over time, they lead to the perception by the nurse of being cared for. Table 1 below displays the eight caring factors, their definitions, and the associated behaviors used by nurse managers. These eight caring factors are essential to the nurse manager-staff nurse relationship and served as the foundation in the development of the CAT-adm© survey instrument.

Table 1: Caring Behaviors - definitions and behaviors used by the nurse managers in relationship with staff nurses. Adapted from Duffy (2013, pp. 83-85, 192-193).

Caring Factor	Definition	Behavior
1. Mutual Problem Solving	Behaviors that help staff nurses understand how to confront, learn, and think about their own health and illness. Involves a reciprocal, shared approach with resulting decisions acceptable to both the nurse manager and the staff nurse.	Providing information, soliciting feedback, educating, engaging, reframing, clarifying, validating, brainstorming, practice improvement.
2. Attentive Reassurance	Behaviors that assure staff nurses that managers are reliable and accessible.	Authentic presence, listening, focused attention, notice and recognize, use of humor, celebrations, maintain belief in employees
3. Human Respect	Honoring the worth of humans (in this case staff nurses) through unconditional acceptance, kind and careful handling of the human body, recognition of rights and responsibilities, and appreciation of the whole human person.	Acceptance, value, recognition of rights, responsibilities, ethics, standards, legalities, patients first, call people by name, eye contact
4. Encouraging Manner	An affective factor consisting of the demeanor or attitude of the nurse manager and expressed through verbal and nonverbal messages of support, positive thoughts and feelings, openness to others, belief in the health system, tolerance for positive and negative feelings, creation of "safe space", and encouragement.	Encouraging demeanor, enthusiastic, provide support and training, congruent verbal and nonverbal communication, build relational capacity, recognition

5. Appreciation of Unique Meanings	Concerned with context or worldview. Knowing what is important to staff nurses including their unique sociocultural connections; avoidance of assumptions; acknowledging the subjective value placed on persons, situations, or events; recognizing the significance of the frame of reference and using that in relationship with the staff nurse.	Appreciate frames of reference, point out meaning in work, acknowledge the subjective, preserve the uniqueness of the nurse manager-staff nurse relationship
6. Facilitating a Healing Environment	Refers to the setting where care is taking place, including the surroundings, spaces, stressors (noise, lighting), culture, workflow, and structures for maintaining privacy, safety, aesthetics, confidentiality, and quality.	Respect privacy and confidentiality, create a unit culture of caring, foster teamwork, design manageable workflow, safe environment
7. Basic Human Needs	Recognizing and responding to the primacy of needs identified by Maslow (1954) such as physical, safety and security, social and relational needs and self-esteem and self-actualization.	Attend to personal and employee's physical, emotional health, recognize higher level needs – achievement, self-esteem
8. Affiliation Needs	Persons' needs for belonging and membership in families or other social contexts. Includes appreciation and engagement of the family/caregivers in the healthcare situation and decision-making.	Responsive to belonging needs

(Benson & Dundis, 2003; Duffy, 2013; Maslow, 1954)

Feeling Cared For

Theoretically, when a nurse manager practices in accordance with the caring factors, a positive emotion of feeling cared for is created (Duffy, 2013). Feeling cared for is a necessary antecedent to self-advancement and is considered an intermediate outcome that has the potential to influence self-advancement. Intermediate outcomes represent changes in behaviors, emotions, or knowledge that can influence self-advancement (Duffy, 2013).

Self-Advancing Systems (Outcomes)

Self-advancement is a natural human process that occurs over time, is non-linear, and can be influenced by caring relationships. Self-advancing essentially refers to a person's capacity to change, learn, and advance in their personal goals. Self-advancing systems are dynamic positive processes that enhance well-being and occur naturally

without external control (Duffy, 2013). Self-advancing health systems are quality systems that reflect positive movement that enhances the system's well-being and can be optimized through effective caring relationships among healthcare workers. It is through self-advancing systems that intended health outcomes of care are achieved. In this study it is theorized that caring relationships between the nurse manager and staff nurses (intermediate outcome) may lead to a healthy work environment that will enhance quality outcomes and lead to staff nurse retention and positive patient outcomes (system outcomes).

Caring relationships are critical in the success of both intermediate outcomes and self-advancement processes (Duffy, 2013). Both intermediate outcomes and self-advancing system outcomes are reciprocal and dynamic in nature, which means they affect each other. One role of the nurse manager is to utilize the caring behaviors in their relationships with staff nurses and engage in caring relationships with others to engender their feelings of being cared for. In return, the positive emotion of being cared for enables change and optimization of achieving staff nurse retention, creating a healthy work environment, and quality patient outcomes.

Model Assumptions

There are 13 assumptions (See Table 2) that are components of the QCM® that represent underlying values and beliefs. Eight of the assumptions relate to caring and are listed below with the word *caring* italicized to emphasize the concept.

Table 2. Assumptions of the Quality Caring Model®

1. Humans are multidimensional beings capable of growth and change.
2. Humans exist in relationship to themselves, others, communities or groups, nature (or the environment), and the universe.
3. Humans evolve over time and in space.
4. Humans are inherently worthy.
5. *Caring* consists of processes that are used individually or in combination and often concurrently.
6. *Caring* is protective.
7. *Caring* is embedded in the daily work of nursing
8. *Caring* is a tangible concept that can be measured
9. *Caring* relationships benefit both the carer and the one begin cared for
10. *Caring* relationships benefit society
11. *Caring* is done "in relationship".
12. Feeling "*cared for*" is a positive emotion
13. Professional nursing work is done in the context of human relationships

(Duffy, 2013)

A necessary assumption of this study is when nurse managers demonstrate caring behaviors in each interaction with staff nurses, staff nurses feel cared for. Operationally, the staff nurses' perceptions of feeling cared for was measured by the CAT-adm© survey (See Appendix B).

Definition of Terms

Study concepts and operational definitions are presented in Table 3.

Table 3: Conceptual and Operational Definitions

Study Variable	Conceptual Definitions	Operational Definition
Nurse Manager	In a hierarchical chart the nurse manager is situated immediately before the charge nurse and has 24-hour accountability for unit operations.	In this study the nurse manager has 24-hour accountability for unit operations and is situated above the charge nurse.
Nurse Manager Caring Behaviors	Caring behaviors are carried out by the nurse manager in response to situations or in their day-to-day interactions with others. See Table 1 on page 8 for complete list of caring behaviors.	Nurse manager caring behaviors are verbal and nonverbal and are performed in daily interactions with staff nurses. These caring behaviors are listed in Table 1 on page 8.
Staff Nurse	A nurse who is employed by a hospital and delivers direct patient care is a staff nurse.	For this study a staff nurse will have a minimum of six months employment on a single hospital unit.
Staff Nurse Perceptions	Ability to see, hear or become aware of something within the work environment and interpreting, understanding, and creating meaning for the event.	In this study the nurse manager's caring behaviors, which can be both verbal and nonverbal (actions) performed by the manager are how the staff nurse perceives them. Staff nurse perceptions of nurse manager caring behaviors will be measured by the CAT-adm©.

Caring is a major tenet of relationship-centered professional encounters (Duffy, 2013). Caring is viewed as a process that occurs through relationship-centered professional encounters, when the carer applies the caring factors to others. Thus a

human connection occurs, which is transformative, resulting in the recipient feeling cared for. Feeling cared for is a consequence of the caring process and is measureable (Duffy, 2013).

QCM® was chosen to serve as the foundation for this study because it undergirds the importance of the nurse manager-staff nurse relationship and it specifically identifies the critical nature of bringing caring behaviors into relationships with staff nurses. Staff nurses who perceive feeling cared for by their nurse manager experience positive emotions, which in turn may affect their productivity and interactions with others. Additionally, the QCM® served as the foundation for the development of the CAT-adm© survey.

Development of the CAT- Adm© Survey

The purpose and aims of this study were to further the psychometric development of the CAT-adm© survey which was needed to determine the validity and reliability of the instrument. The CAT- adm© survey had previously undergone limited evaluation contributing to incomplete scientific analysis (Watson, 2009). In 2008, an exploratory factor analysis (EFA) was conducted by Duffy to begin the validation process the CAT-adm© survey (Watson, 2009). The original CAT-adm© survey was used in its 1997 form (94-items). Although the number of participants was satisfactory (N=1850 RNs), internal consistency reliability for the total instrument was acceptable (α = .942), and the number of survey items was reduced (from 94 to 39), a three-factor solution resulted. In the current study, full psychometric testing including confirmatory factor analysis was used to determine the dimensionality of the construct *nurse manager caring behaviors*.

The original CAT Survey© was developed to measure patients' perceptions of nurse caring behaviors. The CAT- adm©, a 94 item survey developed in 1997, was adapted from the CAT Survey© and was designed to measure staff nurses' perceptions of nurse managers' caring behaviors (Duffy, 2013; Watson, 2009). Each of the 94 CAT-adm© survey items corresponds to one of the eight caring factors listed in Table 1. The CAT- adm© survey was written in English at a fourth grade reading comprehension level as determined by using Flesch-Kincaid Grade Level ("Microsoft Office-Word, 2014,"). All statements on the survey relate to activities that commonly occur in staff nurses' daily work environments. Twenty items were worded negatively to minimize error (Watson, 2009). Negatively worded survey items are used to avoid acquiescence, affirmation, or agreement bias (DeVellis, 2012). During administration of the instrument, respondents were asked to circle how often each activity occurred during their work period. Responses were arranged on a 5-point Likert-type Scale with anchors 1 (never) to 5 (always). The total score possible for the 94-items was 470. Lower scores indicated that staff nurses perceived less caring by their manager.

In Chapter One, the purpose statement, specific aims, instrument development, and the theoretical framework were discussed. In the next Chapter the review of literature will be presented. The major concepts of the QCM® will be used to structure the literature review.

CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

The purpose of this literature review was to examine the state of the science about staff nurses' perceptions of nurse managers' caring behaviors and to identify literature supporting the importance of nurse manager caring behaviors within the context of the acute care work environment (hospital). Nurse manager behaviors may affect staff nurses' decisions to leave or stay within the unit/hospital, their commitment to hospital goals, and their professional practice of nursing. Research to evaluate staff nurse perceptions of nurse manager caring behaviors is important because the sense of feeling cared for by the manager is a positive emotion that leads to desired outcomes for the nurse, patient, and hospital. An existing instrument, the CAT-adm© survey (1997), that was designed to measure staff nurse perceptions of nurse manager caring behaviors, lacked full psychometric testing.

The QCM® (2013) was chosen as the theoretical framework to guide this research study, structure the review of literature, and was the basis for the items on the CAT-adm© survey. Findings from the conceptual and empirical literature are presented in four sections. An overview of the concept of caring is presented first. In the second section, literature on nurse manager-staff nurse caring relationship is presented. Of particular interest is the meaning of the nurse manager-staff nurse relationship to the nurse and identification of nurse manager caring behaviors. In the third section, staff nurses' perceptions of nurse managers caring behaviors are explored. A summary will complete the review of literature in section four.

Review of Literature

To evaluate the existing literature concerning staff nurses' perceptions of nurse manager caring behaviors, a literature search was conducted using the electronic databases CINAHL, OVID, MEDLINE, Sociological Abstracts, and PsycINFO. The keywords selected were care/caring, nurse manager, behavior; nurse manager-staff nurse relationship, relationship, nurse, and perceptions. Each of the keywords was combined together to obtain publications on caring, nurse manager-nurse caring relationship, and nurses' perceptions of nurse manager caring behaviors. Careful reviews of titles and abstracts of the publications were reviewed for inclusion in this study. Appropriate references listed in the articles retrieved were also used to support this discussion.

Inclusion and Exclusion Criteria

There was no preset time period; all relevant literature in English was included.

Caring

This section will begin with general definition of care/caring and discernment between the two terms. Then the evolution of the concept of caring will be presented.

Care/Caring Definition

Care is defined as a disquieted state of mixed uncertainty, apprehension, and responsibility ("Merriam-Webster's Online Dictionary," 2014). In contrast, caring is defined as feeling and exhibiting concern and empathy for others ("The Free Dicitionary," 2014). There is a distinctive difference between caring for someone and providing care to someone. Sargent (2001) illustrates this difference.

To state that a nurse is caring *with* her patients is similar to the statement that a nurse is caring *for* her patients. In the former, the adjective meaning of caring typically

exemplifies the personal attributes of the nurse as possessing a human trait, in the later; the noun caring refers to the action of providing nursing care (and all that this might include) relating to the function of the nurse (p. 139).

The term care/caring is often used in nursing literature interchangeably (Kyle, 1995). This is evident by many nurse theorists and researchers who developed theoretical models and conducted research on the concept of caring (Kyle, 1995; Morse, Bottorff, Neander, & Solberg, 1991).

Evolution of the Concept of Caring

Eight publications were reviewed on the concept of caring. One was a meta-synthesis (Finfgeld-Connett, 2007), two were concept analyses (Brilowski & Wendler, 2005; Sargent, 2012), one was a comparative analysis of the literature (Morse et al., 1991) , two were literature reviews (Kyle, 1995; Morse et al., 1991), one was an application to existing theory (Smith, 1999), and one was an editorial (Veronesi, 2001). Five of the eight publications suggested that the concept of caring is not fully understood and therefore, definitions of the concept vary (Kyle, 1995; Morse et al., 1991; Morse, Solberg, Neander, Bottorff, & Johnson, 1990; Sargent, 2012; Smith, 1999). However, it is clear in reviewing these publications that intense passion and discourse exists about the concept of caring.

Beginning with the founder of modern nursing, Florence Nightingale, research on the concept of caring was prevalent, and largely taken for granted (Ray, 1989). Many nursing scholars proclaimed that caring was fundamental to nursing practice, the central focus of nursing, and the essence of nursing (Brilowski & Wendler, 2005; Carter et al., 2008; Finfgeld-Connett, 2007; Nightingale, 2008; Ray, 1989). Much like Ray (1991),

early researchers were inspired to conduct studies to explore and understand the concept of caring (Fealy, 1995), extract the concept from theory (Smith, 1999), identify core attributes of the concept (Brilowski & Wendler, 2005), and to conduct a concept analysis of caring (Brilowski & Wendler, 2005). However, Morse et al. (1991) profoundly emphasized that if caring is the essence of nursing, then it must be demonstrated and not simply proclaimed. More importantly, Morse et al. (1991) asserted that for nursing to be legitimized as a profession, understanding the concept of care/caring must be delineated and *linked to outcomes*.

Two concept analyses were conducted on the concept of caring (Brilowski & Wendler, 2005; Sargent, 2012). Brilowski & Wendler (2005) used an evolutionary approach to their concept analysis, whereas Sargent (2012) conducted a review of nine concept analyses on the concept of caring. Based on the Sargent's review, several attributes of the concept of caring were found (Sargent, 2012). However, no consistent conceptualization was apparent, and therefore Sargent challenged the definition of nursing as a caring profession. Sargent (2012) recommended reframing the concept of caring as a discursive practice rather than declaring that caring is the essence of nursing. Furthermore, Sargent suggested that there was a need to know why caring needs to be conceptualized. Thus, Sargent's belief that caring has broad implications in practice lends itself to the advancement of caring research (Sargent, 2012).

Brilowski and Wendler (2005) defined caring as a process. The authors identified the antecedents, attributes and consequences of caring. Antecedents for caring included trust, rapport, understanding of self and others, and commitment. Antecedents of caring for the patients' families or for the system were not included. Attributes of caring were

identified only by Brilowski and Wendler (2005) which defined the core concepts of 1) caring relationship (trust, intimacy, and responsibility); 2) caring action (doing for the patient or being with) including nursing care, touch, being present with the patient, and clinical competence; 3) caring attitude (disposition to act); 4) caring acceptance of others (respect and dignity); and 5) caring variability (malleable to the patient, environment, and need). Consequences of caring included nurse satisfaction and patients' ability to heal.

Finfgeld-Connett (2007) conducted a meta-synthesis of qualitative reports and these authors also defined caring as a process. Using a similar approach as Brilowski and Wendler (2005) in their meta-synthesis, they identified antecedents and consequences to caring. Antecedents to the caring process included having a need for and openness for caring, and having a mature and moral foundation (Finfgeld-Connett, 2007). Consequences were mental well-being among nurses and patients and improved patient physical well-being (Finfgeld-Connett, 2007). Finfgeld-Connett (2007) did not mention defining attributes in her meta-synthesis although she identified having a working environment that was conducive to caring which is consistent with fostering the caring process.

Nursing literature was examined by Morse et al. (1991) to explore how the concept of caring had been defined and if it could be conceptualized into five categories that were previously identified (Morse et al., 1990). These five categories were caring as a human trait, caring as a moral imperative, caring as an affect, caring as an interpersonal interaction, and caring as an intervention. Morse et al. (1991) found there were no new categories to add; however the literature she examined did not fit neatly into the five categories. After completing the literature review, Morse et al. (1991) were confident

that the concept of caring remained underdeveloped, it had not been clearly explicated, and that it often lacked relevance for nursing practice. This is why the authors believed that nurses needed to link the concept of caring to outcomes in order to legitimize the profession.

Kyle (1995) conducted an integrative literature review to examine the theoretical perspectives and research studies related to the concept of caring. It was determined that caring was a complex process that, although it included caring behaviors, it involved much more than caring behaviors (Kyle, 1995). The caring process included moral, cognitive, and emotional components. Kyle then linked nursing theories, such as Leininger's (1981) transcultural theory of caring, Watson's (1979) caring as a human science, Orem's (1985) self-care theory, Weiss's (1988) holistic care (behavioral model – verbal, non-verbal, and technical), and theorists who described caring as a moral ethic (Carper 1979; Fry 1988; Griffin 1983) to outcomes. Consistent with Kyle's view that caring is a complex phenomenon, the theorists focused on a set of behaviors or activities and viewed caring as a process. Kyle also reviewed both quantitative and qualitative reports of studies that used caring as a concept. The quantitative studies examined patients and/or nurses perceptions of caring and used various instruments to measure the patients and/or nurses perceptions of caring. Findings from these quantitative studies demonstrated that there was incongruence between what nurses perceived as nurse caring behaviors verses how patients viewed nurse caring behaviors. Patients tended to perceive caring more from instrumental behavior (nurse competency) than from expressive behavior (listening). The explanation given for this incongruence was the notion that caring was a complex phenomenon and there was an underlying assumption that caring

cannot be described only in terms of behaviors. Another explanation for patients' perceptions that instrumental behaviors were more important was that expressive behaviors are naturally present and hidden within the work of nurses. Kyle (1995) also reviewed qualitative studies pertaining to the concept of caring. Patients' subjective feelings of being cared for (what the nurse does) or cared about (affective components) by the nurse were captured. Patients perceived being cared for by the nurse as fundamental to nursing care activities, whereas being cared about involved individual nurse behaviors such as positive affect, which made them feel that their nurse was good, considerate, dependable, cognizant of comforts, and good at communication. As Morse et al. (1991) suggested, caring should be linked to patient outcomes, and Kyle's (1995) reviews of the concept of caring made clear that in many studies caring was, indeed, linked to outcomes.

To further decrease the ambiguity about the concept of caring, Smith (1999) situated the concept of caring within the Science of Unitary Human Beings (SUHB). Smith utilized Rogers's theory of SUHB to explicate the concept of caring and unbury its existence with the SUHB. Smith (1999) used SUHB to help explain the concept of caring. Through the process of conceptual clarification, five meanings of caring emerged from the SUHB. These essential meanings were manifesting intentions, appreciating pattern, attuning to dynamic flow, experiencing the infinite, and inviting creative emergence. Smith was able to demonstrate congruence between Roger's SUHB and similar meanings of caring from the literature. Thus Smith concluded that Roger's SUHB was consistent with the concept of caring (Smith, 1999).

To further substantiate caring as central to nursing, professional caring needed to be differentiated from non-professional caring. Fealy (2005) explored the literature to analyze the concept of caring from nonprofessional and from professional perspectives. The author characterized professional caring as a moral dimension of caring. Professional caring demands a responsibility on the part of the carer. This responsibility has a dual component, being responsible for self and having a responsibility to respect the humanity of the individual being care for. The responsibility of the carer perceives a need in another human being and develops a disposition or feeling toward the other. This disposition then motivates the carer to act. The carer is also responsible for their actions as guided by their profession. This was different than caring by non-professionals. The difference, according to Fealy, is the moral obligation of the profession. In other words, professional caring takes place in contexts that are different than everyday normal relationships (non-professional relationships). The analysis of differences between professional versus non-professional caring was important because of the confusion and discourse about whether or not caring is truly the essence of nursing or if it also is applicable to all professionals and non-professionals (Fealy, 1995).

Veronesi (2001) discussed the need to focus on the application of caring to the nurse (Veronesi, 2001). More specifically, Veronesi emphasized the importance of creating a caring environment in which nurses are empowered to deliver a humanitarian as well as a technical aspect to care. Veronesi asserted that employees would not adopt a caring attitude if they do not believe they were being cared for themselves. The nurse manager's role was critical in setting the tone for caring. Veronesi went on to suggest that employees who felt valued and cared for would, in turn, create a caring environment

for patients. Visibility, spending time with employees, and sharing power (shared decision-making) were identified as attributes of the nurse manager that indicated caring.

Nurse Manager-Staff Nurse Caring Relationship

Using the search terms nurse manager, staff nurse, care/caring, and relationship resulted in recovery of nine articles. Combining these search terms returned an additional six articles. None of these focused on the caring relationship between the nurse manager and the staff nurse. Expanding the search terms to include the work environment generated numerous articles (340 articles were found) concerning the professional practice environment, healthy work environments, and Magnet culture (Magnet hospital). The work environment was linked primarily to nursing outcomes such as satisfaction and retention. Of the 340 articles, only 15 were reviewed given their pertinence to this study. The following themes emerged from these articles: 1) the manager's leadership style/behavior influence on nurse outcomes (e.g. retention and satisfaction) (Boyle, Bott, Hansen, Woods, & Taunton, 1999; Hansen, Woods, Boyle, Bott, & Taunton, 1995; McGuire & Kennerly, 2006; Taunton, Boyle, Woods, Hansen, & Bott, 1997); 2) the work environment impact on nurse outcomes (e.g. retention and satisfaction) (Aiken et al., 2008; Duffield et al., 2011; Gormley, 2011; Heath, Johanson, & Blake, 2004; Kirchhoff & Dahl, 2006; Kramer et al., 2007; Kramer, Schmalenberg, & Maguire, 2010; Kramer et al., 2008); and 3) selective nurse manager behaviors contributed to nurse outcomes (e.g. retention and satisfaction) (Laschinger et al., 2003; Wade et al., 2008; Wieck, Dols, & Landrum, 2010). These articles were excluded because the focus of this review is on the nurse manager-staff nurse caring relationship.

Staff Nurse Perceptions of Nurse Manager Caring Behaviors

Search terms used to generate articles related to staff perceptions of nurse manager caring behaviors were: nurse, staff nurse, nurse manager, manager, care/caring, and behaviors. Only one article was found that explored staff nurse perceptions of nurse managers caring behaviors (Longo, 2011).

Longo (2011) conducted a grounded theory study to identify behaviors that nurses believed indicated caring. The purpose of the study was to describe nurses' perceptions of caring behaviors that were demonstrated by nurse managers and nurse peers. The overall finding from this study was the main category - tending to a caring environment. Longo stated that caring behaviors by nurse managers and nurse colleagues that were directed toward nurse peers played a significant role in establishing a healthy work environment. This conclusion was based on the following assumptions: In order to meet the basic needs of patients, nurses must have their own needs met; nurses are inspired to care if they are cared for themselves; and caring involves coming to know the other through relationships. Specifically, the intention to care for fellow nurses was evident in feedback from both the nurses and nurse managers. Barriers to caring were identified as time, workload, and personal barriers. Three subcategories emerged from this study.

1. Caring through helping and supporting (to complete the work of nurses) – recognizing the need above themselves to help others, break away – time out (caring for self), listening, support- manager standing up for nurses.
2. Caring through appreciating – recognition of a person as an individual with unique needs and gifts; acknowledge an individual struggle with both personal and professional challenges; attending to personal matters, sense of family –

consistently working with others; managers barrier – appreciate busy stuck in the middle; have a voice in solving problems, not recognized for ideas.

3. Acknowledging unappreciated caring – hostile work environment, bullies, negative thinkers. Two options – avoidance or rise above and forget a relationship – willingness to be caring in a relationship with others despite barriers.

These findings suggested that nurses demonstrate caring behaviors towards their colleagues by coming to know them on both a professional and a person a level. These behaviors formed the foundation for an environment that supported the consistent demonstration of caring. Caring played an important role in relationships and provided a means for understanding successful relationships among healthcare workers. Longo (2011) believed that caring behaviors had a positive influence on nurse-nurse and nurse-patient outcomes. In addition, caring behaviors contributed to the development of an environment in which caring was supported and embraced. The author concluded that nurse managers' caring behaviors may play a significant role in establishing relationships that promote healthy work environment.

Measurement of Nurse Manager Caring Behaviors

Duffy described how the caring factors embedded in the Quality-Caring Model® can be applied to nursing leadership (Duffy, 2013, pp. 190-195). On page eight of this paper (see Table 1), the definitions, behaviors, and intent of the caring factors related to nurse managers were presented. These caring factors, when applied by nurse managers in interactions (caring relationships) with staff nurses, can be perceived as caring by the recipient (in this case, staff nurses). Measuring staff nurses' perceptions of nurse managers' caring behaviors has not been extensively studied. Duffy (2013) began

development of the CAT- adm© survey to capture staff nurses' perceptions of nurse managers' caring behaviors. Because rigorous psychometric testing of the CAT- adm© survey had not been completed, psychometric testing was undertaken in this study.

Summary and Critique

The purpose of this literature review was to examine the concept of caring, to explicate the state of the science on staff nurse perceptions of nurse manager caring behaviors, and to identify literature supporting the importance of nurse manager caring behaviors. Literature on the concept of caring was also reviewed to understand the meaning of caring in the nurse manager-nurse relationship and relevance to caring behaviors of the manager. Next, the literature on nurse manager-staff nurse relationships was reviewed and the concept of caring was linked to the relationship between the nurse manager and the staff nurse. Lastly, literature for nurses' perceptions of nurse managers' caring behaviors was explored.

This chapter began with an overview of the concept of caring. Commonalities of the articles reviewed demonstrated the concept is still vague, lacks a common definition, and research is needed to further understand the meaning of caring to patients. Despite the efforts by many researchers and theorists the concept remains unclear. The discourse as to whether the concept should define nursing practice continues. Duffy's QCM® demonstrated that the concept of caring occurs in relationship with others (Duffy, 2013). The relational aspects of the QCM® set it apart from the other theorists and researchers.

Few articles were found that related to the caring relationship between nurse managers and staff nurses. However, Duffy's (2013) QCM® contains four relationships that serve as a foundation for her model. Two of the relationships, relating to self and

relating to each other, are particularly applicable to the nurse manager-staff nurse relationship. Nurse managers who apply these caring factors in their relationships with staff nurses creates a meaningful connection. (Duffy, 2013). This human connection facilitates staff engagement and commitment and creates positive energy. Thus, sustaining nurses' passion for their work translates into expert care for patients and their families.

There was an evident gap in the literature on nurses' perceptions of nurse manager caring behaviors. Only one study was found that explored nurses' perceptions of nurse manager caring behaviors. This study was a qualitative study that demonstrated that nurses need and want to feel cared for. Findings from this study compel nurse managers to create an environment of caring. Nurses in this study related the importance of having a manager who listens, is physically present, shows support, recognizes and acknowledges the individual, and is attentive. Nurses identified these types of actions by nurse managers as caring behaviors.

From this review of the literature multiple gaps were identified. Very few articles were found on the nurse manager-staff nurse relationship and nurses' perceptions of nurse manager caring behaviors. Duffy's QCM® was mentioned throughout the literature review demonstrating its applicability to understanding the relational aspects of the nurse manager-staff nurse relationship and use of the caring factors that are key to the nurse feeling cared for (Duffy, 2013). In addition, the QCM® served as the development of the CAT- adm© survey that, when fully developed and tested, will measure the nurses' perceptions of nurse manager caring behaviors.

Having an instrument that measures the caring behaviors of nurse managers is defensible because of the gaps identified in the literature. While a tool to measure nurse managers' caring behaviors exists (the CAT- adm© survey), it lacks rigorous psychometric testing.

CHAPTER THREE

METHODS

The purpose of this study was to evaluate the validity and reliability of CAT-adm© 94-item survey. However, to confirm the CAT-adm© survey as a valid and reliable instrument to measure the construct of nurse manager caring behaviors, psychometric testing of the CAT-adm© survey was needed. Three aims of this study were specifically designed to test the psychometric soundness of the CAT-adm© survey: a) to evaluate construct validity by describing the factors that account for variance in the staff nurses' perceptions of nurse manager caring behaviors, b) to estimate internal consistency reliability, and c) to potentially reduce the number of items on the survey.

A cross-sectional, descriptive design was used to evaluate the purpose and specific aims of this study. The phenomenon of interest was staff nurses' perceptions of nurse managers' caring behaviors. Variables related to the phenomenon of interest were defined, both conceptually and operationally (See Table 3, pg.12), and led to the theoretical interpretation of the findings (Burns & Grove, 2009). If the CAT-adm© survey was to be used to measure the phenomenon of interest, it was essential that robust psychometrics of the CAT-adm© survey be performed to determine if the survey, in fact, measured *nurse managers' caring behaviors*.

Development of surveys involves the use of sequential steps to measure a construct of interest. Four common steps used are: 1) Construct definition and content domain, 2) generating measurement items, 3) designing and conducting studies to refine the instrument, and 4) finalizing the scale (Netemeyer, Bearden, & Sharma, 2003). The construct of interest in this study was nurse manager caring behaviors as perceived by the

staff nurses. The first three steps in the development of the CAT-adm© survey were completed by Duffy (Watson, 2009). However, step four had not been completed. Although, the CAT- adm© survey had previously undergone limited evaluation, a complete and rigorous psychometric analysis was needed to finalize the scale.

In 2008, Duffy performed exploratory factor analysis on the new CAT- adm© survey (Watson, 2009). The sample in this study consisted of 1,850 Registered Nurses (RNs). Using principal components analysis, three factors explained 63.44% of the variance; shared decision making, human respect, and non-caring. Internal consistency reliability for the total instrument measured .942 using Cronbach's alpha. Through review of the factor loadings, Duffy was able to reduce the number of items on the survey instrument to 39. However, the study was conducted in one region of the country with a convenience sample. In the current study, the original CAT-adm© was tested using the original 94-item survey and, consistent with the theoretical model used for the instrument development and this study, an eight-factor solution was proposed.

Design

Psychometric testing was conducted to satisfy the three specific aims of this study: 1) to evaluate construct validity of the CAT-adm© survey (dimensionality of the construct -nurse manager caring behaviors), 2) to estimate internal consistency reliability, and 3) to reduce administrative burden by reducing the number of items on the survey instrument. This included Confirmatory Factor Analysis (CFA), Exploratory Factor Analysis (EFA), factor rotation, factor extraction, factor interpretation, and item reduction analysis. Univariate and descriptive statistics were also used in this study.

Confirmatory factor analysis (CFA) was used to evaluate construct validity of the instrument (Aim 1) and internal consistency reliability (Aim 2). Confirmatory factor analysis answered research question number one: Will the factor structure of the observed data fit an 8-factor solution? Evaluation of the construct validity of the CAT-adm© survey validated the dimensionality of the construct *nurse manager caring behaviors*. CFA is based on theory and tests a hypothesis about the existing factor structure (Burns & Grove, 2009). CFA was used to explore and confirm a particular pattern of relationships that were predicted. CFA tested the model fit in this study.

Next EFA was used to identify the underlying structure. This included factor rotation to reveal the nature of the factors and provide meaningful, interpretable patterns among the items that were obscured. The two types of rotation are orthogonal and oblique (DeVellis, 2012) and both were used in this study. Orthogonal rotation examines factors that are uncorrelated (independent of one another) and oblique rotation examines factors that are correlated.

After factor rotation, the number of factors to retain was determined by Eigenvalue rule (DeVellis, 2012) and parallel analysis (Hayton 2004; O'Connor, 2008). Although parallel analysis was not planned a prioi, using this method of analysis to determine the number of factors to extract was necessary. Parallel analysis is discussed in detail in the results section of this paper. Factor loadings between .60-.90 are considered acceptable (Netemeyer et al., 2003). In this study factor loadings of a minimum of 0.60 were retained. Maximum likelihood estimation (MLE) is the most widely used approach to estimate model parameters. This is expressed at the R^2 for each

item an indication of the proportion of variance in the item explained by the factors (Waltz, Strckland, & Lenz, 2010).

Once the decision was made on the number of factors to retain, then the investigators provided a conceptual label to the factor. Applying a conceptual label to the factor that makes sense after reviewing the items that loaded 0.60 or greater. Factor interpretation was performed using a combination of expert opinion (did the items that loaded on the factor make sense?) and if the items met minimum loading criteria of 0.60 or greater on the factor (Netemeyer et al., 2003).

Item reduction analysis was performed after EFA to reduce the number of items thereby reducing participant burden when administering the CAT-adm© survey (Aim 3). To answer research question number four: What subset of items can be reduced while maintaining an acceptable factor structure? Item to total correlation and Cronbach coefficient alpha were used to determine the number of items to reduce while maintaining reasonable factor structure (DeVellis, 2012). Additional procedural steps were conducted to decrease the CAT-adm© survey to a 25-item tool. These procedural steps are described in detail in the results section of this paper.

Internal consistency reliability (ICR) of the CAT- adm© survey was determined by Cronbach alpha (Aim 2). To answer research question number two: What is the internal consistency reliability of the CAT- adm© survey? A Cronbach alpha > .70 is acceptable for new scale development (DeVon et al., 2007).

Question number four: What are staff nurses' perceptions of nurse manager caring behaviors? was answered using univariate analysis. Descriptive statistics were used to describe the sample population in this study (Staff Nurses). Univariate analysis

was used to show the distribution of the staff nurses' perceptions of nurse manager caring behaviors. This involved using measures of central tendency, dispersion and normality.

Human Subjects Approval

The CAT-adm© survey and the Staff Nurse Demographic Questionnaire were administered to staff nurses who were employed in variety of acute care hospitals in the United States (see Appendices B and C). Study sites were selected based on personal or committee members' previous associations with the institutions. Only hospitals or hospital systems that had greater than 500 beds were chosen to participate in this study to maximize the potential for recruiting the sample size needed for this study.

Given the minimal risk to the study participants, expedited review by the Institutional Review Board (IRB), Behavioral and Social Sciences category of research, of the Indiana University-Purdue University Indianapolis (IUPUI) was obtained. Additional IRB approvals were obtained from the hospitals that agreed to allow staff nurses to participate in this study and who required institution-specific approval. Study participants received the Staff Nurse Informed Consent Statement (electronically) that explained the study, potential benefit and risks, confidentiality and anonymity, and the investigators' contact information prior to completing the CAT-adm© survey (see Appendix D). Voluntary consent was implied for Staff Nurses who read the Staff Nurse Informed Consent Statement and who continued on with the CAT-adm© survey.

The CAT-adm© survey was administered through an electronic device within the hospital setting. REDCap ("Indiana University.REDCap. Indiana CTSI Collaboration in Biomedical/Translational Research (CBR/CTR) ") is a secure, web-based database management tool used for electronically capturing research data. REDCap is available

for Indiana University researchers and students through the Indiana Clinical and Translations Sciences Institute located on Indiana University campuses. REDCap was chosen as the method of administering the CAT-adm© survey because it can be linked to any hospital's intranet system and the survey can then be distributed securely to the study participants. Another desirable aspect of REDCap was the ability to archive and download survey data into a statistical program for analysis.

In addition to REDCap security, confidentiality and anonymity was safeguarded through the use of a numerical coding system that was not linked to names and thereby protected the identity of the participating nurses. The study investigator was responsible for data management. No hospital representative that employed the participating staff nurses had access to the data or knew that any staff nurse was enrolled in the study. The computer used to store the study data was password-protected.

Although there were no immediate benefits to the staff nurses who participated in this study, longer term potential benefits for participants could include the satisfaction derived from participating in research, being part of knowledge generation related to staff nurses' perceptions of nurse managers caring behaviors, and assisting in instrument development. Because the risks were minimal, the potential benefits of the proposed study outweighed the risk to the individual staff nurse participants.

Sample and Setting

Convenience sampling of acute care hospital staff nurses was used for this study. The hospitals approached to participate were those known to the study team and those recommended by the dissertation committee members. The pool of potentially eligible participants was obtained through hospitals that agreed to participate in this study.

DeVillis (2012) suggested using a ratio of 5 to 10 participants per survey item as a basis for determining sample size. Therefore, a sample of 940 participants was sought. Larger sample sizes are needed in factor analysis to determine the factor structure particularly when the number of items to be factored (Burns & Grove, 2009). Therefore with a 94-item survey 940 participants were deemed adequate.

Permission from each hospital's Chief Nursing Executive (CNE) to conduct the study was obtained. A letter was sent to each hospital's CNE asking for support to conduct this study. The letter provided the CNE with brief description of this study and the investigator's contact information (see Appendix E). Following consent and support from the CNEs and approval from the IRBs, the web-based CAT-adm© survey was administered.

Study Participants

The sample was derived from the target population of accessible staff nurses working in acute care hospitals in the United States (U.S.). From this accessible population of staff nurses, the following inclusion and exclusion criteria were met:

- Inclusion criteria - staff nurses with a minimum six months experience on the current unit in which they were employed. Only permanent staff members were included in this study.
- Exclusion criteria - staff nurses with less than six months experience on the unit in which they were employed. No temporary or traveling staff RNs were included in this study. Six months duration of employment on one particular unit was chosen because this will allow the prospective participants the time

needed to establish and reflect upon relationships that have developed with the nurse manager.

Although this was a convenience sample from multiple hospitals, only participants who meet inclusion criteria were recruited. Should it be necessary to increase the generalizability of this study, Burns and Grove (2009) suggested the use of a stratified randomization technique to reflect the types of hospitals, and their selective characteristics.

Participant Recruitment

Each participating hospital received a flyer to post on the nursing units that stated the study purpose, when the survey started and ended, who were eligible to participate, the significance of the study, and how their participation could generate important information related to the nurse manager-staff nurse relationship. More specifically, their participation would confirm the validity and reliability of an instrument designed to measure nurses' perceptions of nurse manager caring behaviors (see Appendix F).

Data Collection

Procedures

The CNE from each of the participating hospitals provided one information technologist contact person to assist in creating a link to the web-based (REDCap) CAT-adm© survey and provided a connection with the staff nurses hospital email addresses. Once the link was operational, an administrative contact person was alerted to distribute the Staff Nurse Demographic and the CAT-adm© survey to the identified pool of prospective study participants through their hospital-secured email accounts. The

hospital-secured email accounts of the study participants provided additional participant confidentiality. Procedural steps are outlined in Table 4 on page 37.

The staff nurses received an email link to the CAT-adm© survey in their employer email account. The title of the link was: "What is your perception of your nurse manager caring behaviors?" The email included the Staff Nurse Informed Consent Statement stating their participation was voluntary and explained the study. The Staff Nurse Informed Consent Statement appeared first so that the study participants could read and voluntary consent prior to completing the Staff Nurse Demographic Questionnaire and CAT-adm© survey. The Staff Nurse Informed Consent Statement contained an embedded link that, when clicked, took the staff nurse to the Staff Nurse Demographic Questionnaire and CAT-adm© survey. After the informed consent and a study information letter was read, he or she could click on the link to go directly to the Staff Nurse Demographic Questionnaire and CAT-adm© survey.

Table 4: Methods - Study Procedural Steps

Study Procedural Steps		
Steps	Description	Comments
1.	Each hospital's Chief Nurse Executive (CNE) was contacted to ask permission to conduct this study.	A letter was sent to each hospital's CNE (see Appendix D). After CNE approval the study investigator moved to Step 2.
2.	Human Subject Approval was obtained from the Institutional Review Board (IRB).	The study investigator submitted the research proposal to the Indiana University-Purdue University (IUPUI) IRB Behavioral and Social Science category of research. After IRB approval the study investigator proceeded to Step 3.
3.	IRB approval was obtained from each participating hospital (if required).	Once approval from each of the participating hospitals was granted the study investigator moved to Step 4.

4.	The CNE of each hospital assigned a person to serve as a contact person to this study investigator to operationalize the study within their hospital setting.	The study investigator communicated with each hospital's designated contact person to set up the REDCap Survey (assuring anonymity of participants and security of network). Once the REDCap was linked to the pool of assessable staff the study investigator proceeded to Step 5.
5.	Each potential RN participant received the REDCap Survey in his or her secure email with a link to participate in the study. The email began with the Staff Nurse Informed Consent Statement.	Staff nurses who read the Staff Nurse Informed Consent Statement and proceeded on to the Staff Nurse Demographic Questionnaire were voluntarily consenting to participate in this study (see Appendices D). Proceed to Step 6.
6.	The staff nurse completes the Staff Nurse Demographic Questionnaire.	The staff nurse completed the Nurse Demographic Questionnaire (see Appendix C). Once the staff nurse completed the demographic questionnaire they proceeded on the CAT-adm© survey (see Appendix B). Proceed to Step 7.
7.	The staff nurse completes the CAT-adm© survey.	Staff nurses were given 6 weeks to complete the survey. The administrative person assigned by each hospital sent reminders out every 2 weeks. Proceed to Step 9.
8.	The study investigator throughout the study assured anonymity of study participants, data integrity, and data cleaning will monitor the REDCap database.	Ongoing until completion of study

Data Optimization

Incomplete surveys posed a significant risk for the generalizability of this study. One such risk for missing data was the study participant's failure to complete the CAT-adm© survey or the Staff Nurse Demographic Questionnaire. To mitigate the risk, the REDCap web-based data management tool was programed with built-in codes notifying the participant of unanswered questions and that prevented the participant from progressing to the next item without selecting a response. The number of participants calculated for this study was 940. DeVillis (2012) suggested that a large sample size is

needed in to increase the generalizability of the conclusions reached by means of factor analysis (DeVellis, 2012).

Response rate also can impact sample size. In web-based or online surveys a response rate of 38% has been reported in a meta-analysis of health professionals (Cho, Johnson, & Vangeest, 2013). A low return rate yielding an inadequate sample size could jeopardize the validity of the factor analytic solutions. Techniques that were used to boost response rates are: 1) Flyers were posted throughout work areas to attract prospective participant's attention, 2) an inviting email title was used to entice the recipient to open the email, 3) an easily accessible link to the survey was embedded in the email, and 4) up to two email reminders were sent during the duration of the study to encourage response rates (McPeake, Bateson, & O'Neill, 2014).

Instruments

Two instruments were used in this proposed study: 1) Staff Nurse Demographic Questionnaire, and 2) CAT-adm© survey.

1. Staff Nurse Demographic Questionnaire was composed of thirteen questions developed for this study (see Appendix C) for use in describing the study participants. This survey was uploaded into the web-based management tool (REDCap) used in this study.
2. CAT-adm© survey was an existing instrument (see Appendix B) that had established content validity and internal consistency reliability ($\alpha = .98$) as determined in a previous study (Watson, 2009).

All instruments were uploaded into the web-based management tool (REDCap).

Data Analysis

The Statistical Analysis System (SAS) software program for conducting statistical analysis ("SAS, Statistical Analysis Software,") was used for this study. Data from the Staff Nurse Demographic Questionnaire and the CAT- adm© was automatically downloaded into the SAS software program. Prior to running the statistical analysis, all data entered into the SAS software were reviewed for accuracy of data points and missing data points. The database was checked weekly to detect malfunction or missing data. Missing data were reviewed to determine whether the information could be obtained and entered into the data file. Should the data not be retrievable then the participant's data would be considered for exclusion from the analysis. Participants who may have randomly missed completing a data point, despite built in reminders to prevent this from happening, may be included. Consultation was obtained from the Indiana University School of Nursing Center for Nursing Research and Scholarship regarding the proposed research design and statistical methods used in this study. Statistical tests to analyze the study's four research questions are in Table 5.

Table 5: Statistical Tests

Research Question	Unit of Measurement	Statistical Test	Comments
CAT- adm© Survey			
1. Will the factor structure of the observed data fit an 8-factor solution??	• Staff Nurses	Multivariate Analysis (Psychometrics) • Confirmatory (CFA) Factor Analysis and Exploratory (EFA) using Principal Components Analysis and varimax rotation for best fit	• CFA was conducted first to evaluated model fit. The null hypothesis proposed was an eight-factor solution fits the data. • EFA was conducted next. EFA identified

			what structure explains the construct.
2. What is the internal consistency reliability of the CAT- adm© survey?	• Staff Nurses	Multivariate Analysis (Psychometrics) • Confirmatory and Exploratory Factor Analysis using Principal Components Analysis and varimax rotation for best fit	• Cronbach alpha
3. What subset of items can be reduced while maintaining an acceptable factor structure?	• Staff Nurses	• Item to total correlations • Cronbach alpha	• Cronbach alpha
4. What are staff nurses' perceptions of nurse manager caring behaviors?	• Staff Nurses	Univariate Analysis • Descriptive • Measures of Central Tendency	
Staff Nurse Demographic Questionnaire			
Thirteen demographic questions are presented in the questionnaire related to: • Hospital • Age • Gender • Ethnicity • Race • Education Degree (Level of Education) • Length of Time (Duration on Current Unit) • Number Years Registered Nurse (RN) • Nursing	• Staff Nurses	Descriptive Statistics • Measures of Central Tendency	

Certification/ Type • Professional Practice Model • Type of Hospital • Type of Population Cared For • Type of Unit Worked On • Professional Practice Model (Name)			

CHAPTER FOUR

RESULTS

The purpose of this study was to conduct psychometric testing to evaluate the validity and reliability of the CAT-adm© survey. The results of this study are presented in two sections within this chapter. In the first section, a brief summary of the sample and setting are presented. The second section consists of the findings organized using each specific research aim and question.

Sample Description

Staff nurses were the unit of measure in this study. DeVillis (2012) suggested that a sample size of 5-10 participants per survey item is sufficient for psychometric testing of a survey. The original 1997 CAT-adm© survey contained 94 items (Watson, 2009). In anticipation of the occurrence of incomplete surveys and surveys completed by nurses who did not meet the inclusion criteria, it was decided that oversampling by 10% would be needed to yield the sample size needed for the CAT-adm© survey. Using the following formula: 94 survey items x 10 participants/item = 940 participants required; assuming 10% surveys would not be usable (90% usable); then 0.9 x N where N equals total sample and N=940/0.9 there were 1045 participants needed for this study. The number of staff nurses who responded to the study was N=1143. However, 1080 (93%) initially agreed to participate and 995 (86%) met inclusion criteria and were enrolled in the study. Of those, 703 (61%) completed all survey questions and comprised the sample for data analysis.

Demographics and Sample Characteristics

Hospital administrators from 10 hospital/hospital systems were approached for inclusion as recruitment sites for this study. Letters were sent to the hospital administrators of each hospital/hospital systems (see Appendix E). Of the 10 hospital/hospital systems, only five hospital administrators responded favorably. The five hospital administrators that responded accounted for the seven hospitals used in this study (See Table 6). Of the seven hospitals, five hospitals were within two systems. One hospital administrator oversaw three hospitals (system), all the others administered one hospital each. Two hospitals were part of a system but each had their own hospital administrator.

Staff nurses were recruited from seven hospitals/hospital systems within the Midwestern, Midatlantic and Southern Regions of the U.S. (See Table 6). Those seven hospitals were located in three states and included a mix of community, academic/teaching, and rural, and included both magnet and non-magnet certified institutions. The number of participants per hospital/hospital system was: Hospital system A-hospitals 1-3 (*n*=153, 21.76%), hospital 4 (*n*=182, 25.89%), hospital system B-hospitals 5-6 (*n*=172, 24.47%), and hospital 7 (*n*=196, 27.88%).

Table 6. Demographics and Sample Characteristics*

Variable	Description	Frequency	Percent
Hospital (# Participants/Hospital)	1 Hospital (system A)	2	0.28
	2 Hospital (system A)	134	19.06
	3 Hospital (system A)	17	2.42
	4 Hospital	182	25.89
	5 Hospital (system B)	102	14.51
	6 Hospital (system B)	70	9.96
	7 Hospital	196	27.88
	Under 25 years old (<25)	64	9.10

Age	25 to 34 years old (25-34)	176	25.04
	35 to 44 years old (35-44)	156	22.19
	45 to 54 years old (45-54)	157	22.33
	55-64 years old (55-64)	136	19.35
	Over 64 years old (65+)	14	1.99
Gender	Female	644	91.61
	Male	59	8.39
Ethnicity	Not Hispanic/Latino	689	98.01
	Hispanic/Latino	14	1.99
Race	American Indian or Alaska Native	9	1.28
	Asian	20	2.84
	Black or African American	30	4.27
	Native Hawaiian or Other Pacific Islander	1	0.14
	White	658	93.6
Education Degree (Level of Education)	RN Diploma	27	3.84
	Associate Degree Nursing	200	28.45
	Bachelor Degree Nursing	351	49.93
	Bachelor Degree Non-nursing	41	5.83
	Master Degree Nursing	45	6.40
	Master Degree Non-nursing	19	2.70
	Doctorate Degree	6	0.85
	Some Graduate Classes	14	1.99
Length of Time (Duration) on Current Unit	Six months to one year (6 months – 1 yr.)	85	12.09
	Greater than one year to three years (>1-3 yrs.)	195	27.74
	Greater than 3 years to 5 years (>3-5 yrs.)	109	15.50
	Greater than 5 years to 10 years (>5-10 yrs.)	150	21.34
	Greater than 10 years to 15 years (>10-15 yrs.)	70	9.96
	Greater than 15 to 20 years (>15-20 yrs.)	46	6.54
	Greater than 20 years to 25 years (>20-25 yrs.)	13	1.85
	Greater than 25 years (>25 years)	35	4.98
Number Years	Six months to one year (6 months – 1 yr.)	48	6.83

Registered Nurse (RN)	Greater than one year to three years (>1-3 yrs.)	86	12.23
	Greater than 3 years to 5 years (>3-5 yrs.)	88	12.52
	Greater than 5 years to 10 years (>5-10 yrs.)	144	20.48
	Greater than 10 years to 15 years (>10-15 yrs.)	75	10.67
	Greater than 15 to 20 years (>15-20 yrs.)	65	9.25
	Greater than 20 years to 25 years (>20-25 yrs.)	51	7.25
	Greater than 25 years (>25 years)	146	20.77
Nursing Certification	Yes	477	67.85
	No	226	32.15
Professional Practice Model (PPM)	Yes	272	38.69
	No	12	1.71
	Unsure	419	59.60
Type of Hospital	Community Hospital	315	44.81
	Academic Hospital (Teaching)	374	53.20
	Rural Hospital /Critical Assess	14	1.99
Type of Population Cared For	Newborn	41	5.83
	Pediatric	37	5.26
	Adult	625	88.90
Type Unit Worked On	Medical	42	5.97
	Surgical	22	3.13
	Medical/Surgical	134	19.06
	Step-Down	58	8.25
	Progressive Care	37	5.26
	Critical Care	84	11.95
	Transplant	12	1.71
	Pediatrics	18	2.56
	Intensive Care	80	11.38
	Perioperative	40	5.69
	Maternal-child (women's Health)	54	7.68
	Emergency Department	47	6.69
	Psychiatric/Mental Health	9	1.28
	Other	66	9.39
Type Certification	25 Categories/Multi selection	These categories did not provide value for interpretation.	
PPM - Name	Open-ended "write in"		

Legend: *Sample Characteristics were based on 703 staff nurses who met inclusion criteria and completed all survey items.

Demographic data were collected to describe the sample of staff nurses who volunteered for this study. Those data included age, gender, ethnicity, race, education, length of time working on the current unit (duration), number of years licensed as a registered nurse (indicating years of experience), and possession of a current specialty certification. Descriptive statistics were used to describe the demographic data. The mode was reported for several of the demographic variables instead of the mean because the data collected was grouped into categories that were mutually exclusive (Burns & Grove, 2009). The mode reflected the score that occurred with the greatest frequency in each category. The nurses were also asked if they had knowledge of the hospital's professional practice model (and to name it) and in what type of hospital and unit they currently worked. Demographic data collected from this study are similar with national statistics on age, gender, education, race, and ethnicity ("Average Magnet Organization Characteristics," 2014; "Facts About the Nursing Workforce," 2010; "The U.S. Nursing Workforce: Trends in Supply and Education," October 2013).

Age. The distribution of the sample (*n*=703) age ranged from under 25 years (*n*= 64, 9%) to over 65 (*n*=14, 2%) years (See Table 6). The mode was 25-34 years (*n*= 176, 25%). National statistics describe the age distribution for staff registered nurses as 25-34 year-olds: 20.6%, 35-44 year-olds: 24.8%, 45-54 year-olds: 29.6%, and 55-64 years old: 17.2% ("The U.S. Nursing Workforce: Trends in Supply and Education," October 2013).

Gender. Most of the staff nurses who participated in this study were female (*n*=644, 91.6%) and 39 (8.4%) were male (See Table 6). Frequency of males in this study was below the national statistic of 9.1% ("The U.S. Nursing Workforce: Trends in Supply and Education," October 2013).

Race/Ethnicity. Not Hispanic/Latino comprised 98% (*n*=689) of the staff nurses and 2% (*n*=14) were Hispanic/Latino (See Table 6). Ninety-four percent (*n*=658) of staff nurses were White. Black or African American, Asian, American Indian or, and Native Hawaiian or Other Pacific Islander collectively comprised only 8.5% (*n*=60) of the sample. National statistics describe race/ethnicity distribution as Hispanic/Latino 4.8%; White 75.4%; African American or Black 9.9%; Asian 8.3%; American Indian or Alaska native 0.4%; and other 1.3% ("The U.S. Nursing Workforce: Trends in Supply and Education," October 2013).

Employment. Staff nurses' responses to the question "How long have you worked on your current unit?" were grouped into eight categories (See Table 6). The mode was greater than one year to three years (*n*=195, 27.74%).

Experience. Years of experience as a staff nurse were also grouped into eight categories (See Table 6). The two largest groups were greater than 25 years (*n*=146, 21%) and greater than five to ten years (*n*=144, 20.5%). The mode is greater than 25 year (*n*=146). The remaining groups were, in ascending order, six months to one year (*n*=48, 7%), greater than 20 to 25 years (*n*=51, 7%), greater than 15-20 years (*n*=65, 9%), greater than ten to 15 years (*n*=75, 11%), greater than three to five years (*n*=88, 12.5%), and greater than one to three years (*n*=86, 12%).

Education/Certification. Level of nursing education was divided into four categories (See Table 6). Fifty percent of the staff nurses had their Bachelor Degree in Nursing (*n*=351) followed by Associate Degree in Nursing (*n*=200, 28.5%). More staff nurses (68%) reported having some type of specialty certification in nursing than those who reported having no additional certification (32%). Respondents could choose among

25 subcategories and they had the option to multi-select responses. Since staff nurses could multi-select if they had more than one certification, there was no way to compute if a staff nurse had more than one certification. Compared to Magnet designated organizations, 51.78% nurses had their Bachelor Degree in Nursing, 35.86% Associate Degree in Nursing, and 33.77% certified by a nationally recognized certifying organization ("Average Magnet Organization Characteristics," 2014).

Professional Practice Model. Staff nurses were asked the question, "What is your hospital's nursing professional practice model (PPM)?" Fifty-nine percent (*n*=419) were unsure about the employing hospitals' PPM, 38.69 % (*n*=272) knew their institutional PPM, and less than two percent (*n*=12) said their hospital did not have a PPM (See Table 6). Staff nurses were given the option to "write-in" their hospital's PPM. The write-in responses were not specific enough to include in the scored responses.

Type of Unit/Population. There were 14 subcategories to choose from relative to the type of hospital unit on which the staff nurses worked (See Table 6). The two largest units staff nurses worked on were either medical, surgical or combined (*n*=198, 28%), and critical care/intensive care (*n*=161, 23%). The mode was medical/surgical (134, 19%). Population of patients the staff nurses cared for mostly was Adults (n=625, 90%).

In summary the demographics of the staff nurses were comparable to the U.S. national statistics for registered nurses. This is important for the generalizability of this study. A majority of participants were white, not Hispanic/Latino, and female. Most of the nurses were between the ages of 25-64, 50% had the BSN degree and 67.85% were certified in some area of specialty. Length of time on current unit was between >1-3yrs

(27.74%) as the longest duration followed by the nurses who worked on their units >5-10 yrs (21.34%). Years of experience as an RN the two largest categories were between > 5 to 10 yrs. (20.48%) and >25 yrs (20.77%). Most of the staff nurses worked in either Community (44.8%) or Academic (53.2%) hospitals that responded to the survey and worked in adult units. Over half (59.6%) of the nurses were unsure if they had a PPM.

Aims, Hypothesis, and Research Questions

Data were analyzed to address the three specific aims, hypothesis, and four research questions of this study using Statistical Analysis System (SAS) software program ("SAS, Statistical Analysis Software,") . The results are presented and organized by aim and related research question. Data were checked for accuracy prior to conducting statistical analysis. It was discovered in the data cleaning process that the 94-item survey uploaded in the web-based management tool (REDCap) did not include three of the survey items. Therefore only 91-items were available for the staff nurses to answer. This omission did not pose a significant risk to the integrity of the instrument analysis because each of the three questions that were inadvertently omitted were in different caring factor categories (8 caring factors) and each of these categories had an adequate number of items for analysis.

Aim 1. Evaluate the construct validity of the CAT-adm© survey by describing the factors that account for variance in staff nurses' perceptions of nurse manager caring behaviors.

Research Question 1 – Will the factor structure of the observed data fit an 8-factor solution? The null hypothesis is an eight-factor solution fits the data.

To evaluate the construct validity of the CAT-adm© survey confirmatory factor analysis (CFA) of the data was performed. Confirmatory Factor Analysis was used to test whether the psychometrically intended pattern of relationships is present (DeVellis, 2012; Netemeyer et al., 2003). Since a theoretical model was used to structure this instrument, CFA was chosen to test the hypothesis that a theory-specified relationship existed between the observed variables and their underlying latent constructs. Appendix G contains the path diagram depicting the expected factor mapping to survey items based on the underlying QCM.

Confirmatory Factor Analysis. The first step in CFA is to examine goodness of fit. Table 7 contains four measures to evaluate model fit. The Chi Square statistic is the most common index used to determine the evaluation of overall model fit (Netemeyer et al., 2003). In this study, the Chi-square value was 14732.7105 and the DF was 3976 ($p<.0001$), therefore the null hypothesis was rejected. The standardized root mean square residual (SRMR), root mean square of approximation (RMSEA), and Bentler Comparative Fit Index statistics were all consistent with an inadequate model fit to the data. All four of the fit statistics indicated inadequate fit, with the conclusion that the factor structure proposed does not fit the data observed. Based on the statistical output, the only plausible conclusion was that the proposed eight-factor solution was not supported by the data. Since the model was rejected using CFA, the next logical step was to perform Exploratory Factor Analysis (EFA) using Principal Component Analysis (PCA) to identify a plausible factor structure given the observed data.

Table 7. Confirmatory Factor Analysis Fit Indexes

Fit Summary	
Chi-Square	14732.7105
Chi-Square DF	3976
Pr > Chi-Square	<.0001
Standardized RMR (SRMR)	0.0472
RMSEA Estimate	0.0621
Bentler Comparative Fit Index	0.8564

Exploratory Factor Analysis. EFA is a variable reduction technique that identifies plausible number of latent constructs and underlying factor structure for a set of variables (Hayton 2004; O' Conner, 2000). EFA was used to identify the structure that explains the construct called nurse manager caring behavior. EFA analysis included assessment of sampling adequacy, determining the number of factors to extract and retain, estimating factor structure (item loadings), factor rotation, and interpretation of the factors.

Sampling Adequacy. The first step in EFA is to measure sampling adequacy using the Kaiser-Meyer-Olkin (KMO) statistic measure. A KMO value greater than 0.6 is considered adequate. A KMO value greater than 0.8 is considered good (Tabachnick, 2007). The KMO measure is based on the following principle: If variables share common factors then the partial correlations between pairs of variables should be small when the effects of other variables are controlled (Munro, 2005). In Table 8 the sampling adequacy was excellent (0.99), meaning factor analysis was appropriate for the variables observed.

Table 8. Sampling Adequacy

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.99093084

Factor Extraction. The next step in EFA is to perform factor extraction. Eigenvalues resulting from the original data set represent the amount of variance accounted for by each factor. In addition to actual Eigenvalues, another recommended technique for determining number of factors to retain is Parallel Analysis (Hayton 2004; O' Conner, 2000). Parallel Analysis (PA) involves comparing the Eigenvalues from the original data set produced by the EFA with random data sets that parallel the actual data (O' Conner, 2000). Eigenvalues are extracted from random data sets that parallel actual data set (observed data set of this study) in terms of the number of cases and variables. In this study, the number of observations consisted of 703 for each of the 91 variables, so a series of random data matrices (703 X 91) for 200 data sets was computer-generated, and the eigenvalues were computed for the correlation matrices for the original data and for each of the 200 random data sets. According to Hayton et al. (2004) the number of random computerized data sets should be reasonably large (range 100-1,000 repetitions). The Eigenvalues of the actual data set were then compared to the Eigenvalues derived from the random data sets. The mean Eigenvalues from the random data serve as the comparison baseline. Eigenvalues that are greater than the mean Eigenvalues from the random data were retained. Only two factors were identified using this methodology (See Table 9).

Table 9. Comparison of Factor Analysis and Parallel Analysis

	Factor Analysis (using Principle Component Analysis)	PA (using Principle Component Analysis)	Components to Retain Using PA - PCA
Component #	**Eigenvalue (Actual)**	**Eigenvalue (mean) (Random)**	**Retain (+) Do Not Retain (-)**
1	55.6674340	1.804133	+
2	3.8900969	1.748821	+
3	1.6441958	1.707009	-
4	1.2359361	1.673505	-
5	1.1441488	1.642085	-
6	1.0117125	1.613027	-
7	0.9674141	1.586825	-
8	0.8951183	1.561153	-

Note: Only the first seven components are listed out of 91 variables in this table. Only first two components were retained.

Factor Variance. The variance that could be explained by each of the factors is displayed in Table 10. Factor 1 explains 55.67 (61.17%) of the variance and Factor 2 contains 3.89 (4.27%) of the variance. Combined, the two factors explain 59.56 (65.45%) of the total variance. Variance explained by each factor, eliminating other factors, provides more specific detail. Factor 1 controlling for Factor 2, is 2.5 times the amount of variance.

Table 10. Factor Variance

Variance Explained by Each Factor		*Variance Explained by Each Factor Eliminating Other Factors*	
Factor1	*Factor2*	*Factor1*	*Factor2*
55.667434	3.890097	17.497999	6.934895

Factor Rotation. The next step was to complete orthogonal and oblique factor rotations to make the loadings more easily interpretable (Netemeyer et al., 2003). Orthogonal (VARIMAX) rotation keeps the factors uncorrelated whereas oblique (PROMAX)

rotation allows the factors to be correlated (DeVellis, 2012; Netemeyer et al., 2003). Oblique (PROMAX) rotation of the data resulted in an inter-factor correlation of 0.70865 indicating that there were substantive correlations between the two Factors. Use of oblique rotation (PROMAX) was selected for further interpretation of the data because of the high inter-factor correlations.

Factor Structure Correlations provide estimates of correlations between the variables (survey items) and the Factors. See Table 11 to see the high correlations on both Factors. The values ranged between -0.81 to +0.92. Correlation values in black bold font reflect the negatively worded survey items loading on the factors at 0.60 or higher. Correlations in Factor 1 range from -0.68645 to 0.91518 and in Factor 2 from -0.81174 to 0.84783.

Table 11. Factor Structure Correlations - Oblique (PROMAX)

	Factor Structure (Correlations)		
	Correlation Between Each Item and the Factor	Factor1	Factor2
q61	Helps me Explore Questions	**0.87119**	0.54992
q57	Asks Me think Nursing/Health Care	**0.86121**	0.55647
q54	Helps me Understand How I Think about Work	**0.89562**	**0.61985**
q60	Teaches Me Nursing/Health Care	**0.85171**	0.56113
q29	Helps Me with my Bad Feelings	**0.86049**	0.57371
q71	Spends Times with Me	**0.88651**	**0.61525**
q66	Makes sure my Co Workers Know My Needs	**0.84619**	0.57051
q92	Helps me to cope with Job stress	**0.91016**	**0.66849**
q28	Ask Me How I Like to do my Work	**0.85933**	**0.60409**
q91	Acknowledges my inner feelings	**0.90410**	**0.67319**
q63	Checks with me to make sure I understand workplace	**0.87215**	**0.63777**
q58	Provides Me Literature about Work	**0.75645**	0.47833
q34	Checks on Me	**0.85332**	**0.61906**

	Factor Structure (Correlations)		
	Correlation Between Each Item and the Factor	Factor1	Factor2
q80	Helps me Feel Less Worried	**0.89161**	**0.67398**
q55	Asks Me how I think Work is going	**0.87919**	**0.66222**
q77	Helps Me Feel Special	**0.91518**	**0.71586**
q90	Knows what is important to me	**0.89317**	**0.68833**
q73	Allows My Family to be Involved in Work Decisions	**0.74332**	0.47796
q64	Makes Me feel stress free as possible	**0.87048**	**0.65774**
q53	Helps Me Deal with Difficult Situations	**0.88798**	**0.69835**
q50	Helps Me Find Solutions to Work Problems	**0.87811**	**0.68807**
q89	Is concerned about how I view things	**0.86467**	**0.67072**
q52	Helps me with All Work Problems	**0.86951**	**0.67908**
q23	Anticipates My Needs	**0.88296**	**0.70225**
q30	Shares Personal Information with Me	**0.74880**	0.51631
q87	Understands My Unique Situation	**0.86768**	**0.68413**
q49	Helps set Performance Goals	**0.82220**	**0.62803**
q26	Shows Concern for Family	**0.84703**	**0.66675**
q45	Is Aware of My Feelings	**0.75674**	0.53980
q78	Keeps Me Challenged	**0.79660**	0.59994
q75	Makes sure I get Breaks I need	**0.76640**	0.56166
q72	Makes me Feels Safe	**0.87444**	**0.71599**
q83	Helps Me to Achieve Goals	**0.86992**	**0.71206**
q93	Respect for things having meaning to me	**0.87688**	**0.72888**
q39	Encourages Me to Talk about my Mind	**0.85523**	**0.69991**
q33	Initiates Conversations	**0.87006**	**0.72304**
q15	Helps Me Believe In Myself	**0.88258**	**0.75010**
q6	Includes Me	**0.84008**	**0.70369**
q25	Shows Concern for Me	**0.89047**	**0.77670**
q31	Expresses Emotions with Me	**0.79942**	**0.65618**
q13	Seems Interested In Me	**0.87172**	**0.76670**
q21	Helps Me See Good in Situation	**0.86501**	**0.76030**
q69	Protects me from Harmful Situations	**0.73142**	0.57275
q86	Respects My Need for Rest Relaxation	**0.81441**	**0.70002**

	Factor Structure (Correlations)		
	Correlation Between Each Item and the Factor	Factor1	Factor2
q18	Encourages Me to Care for Self	**0.81197**	**0.70516**
q76	Monitors My Activities	0.39848	0.12374
q22	Encourages Me to Advance Career	**0.75581**	**0.63043**
q47	Allows Me to Talk Truth No Risk To Job	**0.80948**	**0.70828**
q24	Allows Me to Choose Time Talk	**0.82004**	**0.73653**
q9	Pays Attention To Me	**0.84911**	**0.78260**
q20	Encourages Questions	**0.83312**	**0.77110**
q41	Interested Information I have about Work	**0.83312**	**0.77255**
q10	Enjoys Working with Me	**0.82021**	**0.75805**
q19	Supports My Beliefs	**0.83965**	**0.78916**
q12	Available to Me	**0.80057**	**0.74942**
q40	Patient with Me even if I am difficult	**0.78945**	**0.73843**
q43	Accepts what I say even if Negative	**0.72328**	**0.65134**
q16	Keeps Me Informed	**0.78363**	**0.73658**
q48	Questions Me About My Work	0.33070	0.10318
q81	Allows Me Times Off to be with Family Friend	**0.68522**	**0.61412**
q88	Has No Idea How My Job Affects My Life	**-0.60097**	-0.54656
q3	Treats Me Kindly	**0.71666**	**0.84783**
q37	Pays Attention to Me when I Talk	**0.71316**	**0.81099**
q2	Accepts Me	**0.72213**	**0.80019**
q7	Respects Me	**0.78146**	**0.83625**
q5	Answers My Questions	**0.73702**	**0.78831**
q35	Looks Me in Eye when Talking	**0.64548**	**0.71624**
q1	Listens	**0.78084**	**0.79416**
q32	Responds Honestly Questions	**0.77240**	**0.78609**
q67	Knows what to do in Emergency	**0.63753**	**0.68766**
q65	Respect My need for Privacy	**0.67412**	**0.69941**
q11	Uses My Name	**0.65345**	**0.65693**
q27	Never Shows Emotion	-0.53471	-0.57424
q68	Never asks what I Need	**-0.68645**	**-0.69024**
q94	Out of touch with my work world	**-0.65247**	**-0.68099**

Factor Structure (Correlations)			
	Correlation Between Each Item and the Factor	Factor1	Factor2
q51	Deals with Work Problems Impractical to Me	-0.51675	**-0.64982**
q84	Does not care whether I take care of Myself	**-0.62812**	**-0.73225**
q14	Has No Time for Me	**-0.68310**	**-0.77632**
q42	Talks about Me Openly in front of Others	-0.06255	-0.35556
q8	More Interested in Own Problems	**-0.63980**	**-0.77069**
q4	Ignores Me	**-0.63176**	**-0.77077**
q17	Fails to Keep Promises	-0.48736	**-0.67026**
q44	Seems Annoyed if I speak my true Feelings	-0.58479	**-0.74339**
q79	Makes me Wait a Long Time for Appointment	-0.44075	**-0.64613**
q59	Uses Terms I do not Understand	-0.24588	-0.52016
q36	Refuses to Tell Me Aspects of my Work	-0.43466	**-0.65625**
q74	Interferes with My Basic Routine Practice	-0.33132	**-0.60245**
q46	Does Not Want to Talk to Me	**-0.62433**	**-0.81174**
q38	Acts as if Disapproves of Me	-0.57545	**-0.79294**
q62	Discourages Me Ask Questions	-0.56147	**-0.80711**
q82	Discourages Me from Interacting with Others	-0.44794	**-0.75488**
Factor Loadings minimum 0.60 or higher		77/91 (84.6%)	73/91 (80%)
Number loadings negative worded items		08/20	12/20
Minimum loadings 060 or higher		(40%)	(60%)
Number of items loading 0.60 or higher on both factors		64/91 (70%)	

Legend: Column One - Survey item number; Column Two - Survey item; Column Three – Factor 1 Parameter estimates; Column Four - Factor 2 Parameter estimates. Highlighted in bold black font in columns three and four indicate the factor loadings that met minimal factor loading of 0.60 or higher.

Interpretation of the Factors. The next step in EFA is to interpret (label) the retained Factors. To do this, the factor loadings were examined using a priori factor loading limits set at 0.60 or higher (as determined in the Methodology section) to indicate factor membership. The relationship of variables to factors is seen in the Factor Structure Correlations table above. Factor 1 had 77/91 (84.6%) of the items loading 0.60 or higher.

Factor 2 had 73/91 (80%) survey items loading 060 or higher. Negatively worded items loading on the factors were higher on Factor 2 (12/20, 60%) than Factor 1 (8/20, 40%). Items loading at minimum 0.60 or higher on both Factor 1 and Factor 2 were 64/91 (70%). Indicating there is a relatively large amount of correlation (shared variability) between the two factors. Factor 2 had 27/64 (42%) items loading .60 or higher and the factor structure loadings were greater on Factor 2 than Factor 1. Of those 27 items that had higher correlation with Factor 2 (belonged more to Factor 2, but not exclusively), 16 were negatively worded items. All but one negatively worded item (item number 88), loaded more strongly (-0.600997) on Factor 1.

Given that there was a large amount of shared variance (70%) between the two factors and the negatively worded items loaded more heavily on Factor 2 (80%); Factor 2 was determined to be redundant with Factor 1. Therefore, Factor 2 was eliminated which resulted in a one-factor solution. This is also supported by the variance explained by each factor eliminating the other factors that was shown previously in Table 10. Factor Variance. Factor 1 had 2.5 times the amount of variance than Factor 2 (17.50 versus 6.94 respectively). Eliminating Factor 2 resulted in revisiting the items loading on Factor 1. Only items that loaded both more substantively and stronger on Factor 1 were retained. This resulted in reducing the number of items on Factor 1 to 59.

After reviewing the items remaining on Factor 1, Factor 1 was conceptually labeled *Caring Behaviors,* meaning the items measured various aspects of caring behaviors consistent with the theoretical framework of this study. This is not surprising since the survey items were designed to measure caring behaviors.

Aim 2. Estimate internal consistency**.**

Research Question 2 - What is the internal consistency reliability of the CAT-adm© survey?

The Cronbach alpha coefficient obtained for the retained Factor 1 was 0.99, which is considered excellent. This level of internal consistency suggested that the number of items could be reduced to less than the retained 59 survey items (George & Mallery, 2003).

Aim 3. Conduct item reduction analysis to reduce administrative and participant burden.

Research Question 3 - What subset of items can be reduced while maintaining an acceptable factor structure?

Item reduction analysis is important for two reasons, 1) encouraging respondent cooperation and 2) limiting respondent fatigue (Netemeyer et al., 2003). Based on prior experience with survey administration, a survey instrument containing only 25-items was desired to increase respondent participation and reduced survey fatigue. The 91-item survey had only a 61% completion rate. Staff nurses who did not complete the survey appeared to stop answering questions near the end of the survey. They especially became fatigued around items 85-95.

The procedural steps for item reduction analysis included assessing minimum factors loadings of 0.60 or higher, evaluating survey item-total correlation (deleted variable) and Alpha; and, if required, randomly selecting retained items to arrive at a scale with a maximum of 25-items.

Minimum Factor Loadings. Factor loadings were assessed in the prior section on the interpretation of the factors. In that section, 59 out of 91 survey items were

retained on Factor 1 after Factor 2 was eliminated, retaining only those items that loaded both substantively and more strongly on Factor 1. The next step was to consider the survey item-total correlation (deleted variable) and Alpha of the 32-items eliminated from the survey.

Cronbach Alpha After Item Deletion. Using the Cronbach Alpha with Deleted Variable Table 12 below, the item-total correlations and Alpha if deleted values are presented. Consideration of the survey item-total correlation (deleted variable) and alpha is of importance; if alpha decreases considerably, then removal of the survey item should be questioned (Netemeyer et al., 2003). Each of the 32-survey items that were deleted without substantive impact on the Cronbach alpha and thereby reduced the total number of survey items from 91 to 59. The Cronbach alpha after deleting the 32-items on the survey was excellent (α= .99). These 59 survey items represented nurse manager *caring behaviors*.

Table 12. Cronbach Coefficient Alpha – with Deleted Variable

Cronbach Coefficient Alpha	
Variables	*Alpha*
Raw	0.971713
Standardized	0.969785

Cronbach Coefficient Alpha with Deleted Variable

	Raw Variables		*Standardized Variables*		
Deleted Variable	*Correlation with Total*	*Alpha*	*Correlation with Total*	*Alpha*	*Label*
q1	**0.787242**	**0.971020**	**0.788630**	**0.968950**	**Listens**
q2	**0.740782**	**0.971115**	**0.741759**	**0.969034**	**Accepts Me**
q3	**0.737141**	**0.971153**	**0.738048**	**0.969041**	**Treats Me Kindly**
q4	**-.633376**	**0.973128**	**-.631964**	**0.971421**	**Ignores Me**
q5	**0.751895**	**0.971123**	**0.753349**	**0.969013**	**Answers My Questions**
q6	0.839920	0.970892	0.840179	0.968857	Includes Me
q7	**0.798110**	**0.971004**	**0.800082**	**0.968929**	**Respects Me**

Cronbach Coefficient Alpha					
Variables		*Alpha*			
q8	**-.636215**	**0.973428**	**-.633323**	**0.971424**	**More Interested in Own Problems**
q9	0.853744	0.970898	0.854657	0.968831	Pays Attention To Me
q10	0.829257	0.970912	0.829331	0.968877	Enjoys Working with Me
q11	**0.669062**	**0.971187**	**0.670151**	**0.969162**	**Uses My Name**
q12	0.804112	0.970978	0.804096	0.968922	Available to Me
q13	0.874078	0.970800	0.873965	0.968797	Seems Interested In Me
q14	**-.674458**	**0.973295**	**-.672351**	**0.971490**	**Has No Time for Me**
q15	0.879666	0.970765	0.879121	0.968787	Helps Me Believe In Myself
q16	0.784179	0.971010	0.783750	0.968959	Keeps Me Informed
q17	**-.489484**	**0.973010**	**-.488149**	**0.971178**	**Fails to Keep Promises**
q18	0.813011	0.970889	0.812186	0.968908	Encourages Me to Care for Self
q19	0.850953	0.970877	0.850653	0.968839	Supports My Beliefs
q20	0.840477	0.970894	0.840815	0.968856	Encourages Questions
q21	0.871617	0.970816	0.871562	0.968801	Helps Me See Good in Situation
q22	0.751723	0.970988	0.751276	0.969017	Encourages Me to Advance Career
q23	0.873319	0.970785	0.871542	0.968801	Anticipates My Needs
q24	0.819489	0.970890	0.818292	0.968897	Allows Me to Choose Time Talk
q25	0.889592	0.970742	0.888794	0.968770	Shows Concern for Me
q26	0.840136	0.970821	0.838556	0.968860	Shows Concern for Family
q27	**-.523252**	**0.972930**	**-.520981**	**0.971234**	**Never Shows Emotion**
q28	0.837084	0.970840	0.834283	0.968868	Ask Me How I Like to do my Work
q29	0.840341	0.970848	0.837876	0.968862	Helps Me with my Bad Feelings
q30	0.734542	0.971039	0.733112	0.969049	Shares Personal Information with Me
q31	0.795937	0.970942	0.794833	0.968939	Expresses Emotions with Me
q32	**0.787960**	**0.971004**	**0.788923**	**0.968949**	**Responds Honestly Questions**
q33	0.866290	0.970819	0.865012	0.968813	Initiates Conversations
q34	0.834251	0.970850	0.832882	0.968871	Checks on Me
q35	**0.665419**	**0.971233**	**0.666724**	**0.969168**	**Looks Me in Eye when Talking**
q36	**-.441719**	**0.972726**	**-.439765**	**0.971096**	**Refuses to Tell Me Aspects of my Work**
q37	**0.738654**	**0.971128**	**0.740234**	**0.969037**	**Pays Attention to Me when I Talk**
q38	**-.585754**	**0.973031**	**-.583936**	**0.971340**	**Acts as if Disapproves of Me**
q39	0.855443	0.970817	0.854723	0.968831	Encourages Me to Talk about my Mind
q40	0.793187	0.970976	0.792476	0.968943	Patient with Me even if I am difficult
q41	0.840806	0.970857	0.841772	0.968855	Interested Information I have about Work

Cronbach Coefficient Alpha					
Variables		*Alpha*			
q42	**-.090489**	**0.972442**	**-.088913**	**0.970494**	**Talks about Me Openly in front of Others**
q43	0.720485	0.971080	0.719935	0.969073	Accepts what I say even if Negative
q44	**-.588090**	**0.973302**	**-.585436**	**0.971343**	**Seems Annoyed if I speak my true Feelings**
q45	0.742702	0.971045	0.740426	0.969036	Is Aware of My Feelings
q46	**-.627579**	**0.973107**	**-.625985**	**0.971411**	**Does Not Want to Talk to Me**
q47	0.804413	0.970877	0.802993	0.968924	Allows Me to Talk Truth No Risk To Job
q48	**0.308484**	**0.971734**	**0.309251**	**0.969801**	**Questions Me About My Work**
q49	0.808726	0.970897	0.806547	0.968918	Helps set Performance Goals
q50	0.866230	0.970811	0.864851	0.968813	Helps Me Find Solutions to Work Problems
q51	**-.505582**	**0.972936**	**-.502638**	**0.971203**	**Deals with Work Problems Impractical to Me**
q52	0.857790	0.970848	0.855963	0.968829	Helps me with All Work Problems
q53	0.880568	0.970796	0.879004	0.968788	Helps Me Deal with Difficult Situations
q54	0.879313	0.970793	0.876846	0.968792	Helps me Understand How I Think about Work
q55	0.862862	0.970797	0.860603	0.968821	Asks Me how I think Work is going
q57	0.831740	0.970826	0.828395	0.968879	Asks Me think Nursing/Health Care
q58	0.729109	0.971031	0.726243	0.969062	Provides Me Literature about Work
q59	**-.263877**	**0.972354**	**-.262894**	**0.970794**	**Uses Terms I do not Understand**
q60	0.826520	0.970860	0.823915	0.968887	Teaches Me Nursing/Health Care
q61	0.846398	0.970818	0.843714	0.968851	Helps me Explore Questions
q62	**-.572470**	**0.972948**	**-.570564**	**0.971318**	**Discourages Me Ask Questions**
q63	0.848803	0.970810	0.846208	0.968847	Checks with me to make sure I understand workplace
q64	0.852369	0.970795	0.850291	0.968839	Makes Me feel stress free as possible
q65	**0.688348**	**0.971144**	**0.687718**	**0.969130**	**Respect My need for Privacy**
q66	0.823320	0.970861	0.820060	0.968894	Makes sure my Co Workers Know My Needs
q67	**0.643368**	**0.971215**	**0.642867**	**0.969210**	**Knows what to do in Emergency**
q68	**-.663483**	**0.973449**	**-.658930**	**0.971467**	**Never asks what I Need**
q69	0.719955	0.971052	0.717965	0.969076	Protects me from Harmful Situations
q71	0.868163	0.970801	0.865289	0.968812	Spends Times with Me
q72	0.869528	0.970768	0.868371	0.968807	Makes me Feels Safe
q73	0.718205	0.971025	0.715596	0.969081	Allows My Family to be Involved in Work Decisions

Cronbach Coefficient Alpha					
Variables		*Alpha*			
q74	**-.343174**	**0.972657**	**-.341080**	**0.970927**	**Interferes with My Basic Routine Practice**
q75	0.745066	0.970984	0.742712	0.969032	Makes sure I get Breaks I need
q76	**0.377914**	**0.971619**	**0.377638**	**0.969680**	**Monitors My Activities**
q77	0.904184	0.970670	0.901738	0.968747	Helps Me Feel Special
q78	0.784319	0.970985	0.782452	0.968961	Keeps Me Challenged
q79	**-.446660**	**0.972644**	**-.445316**	**0.971105**	**Makes me Wait a Long Time for Appt.**
q80	0.876395	0.970780	0.874045	0.968797	Helps me Feel Less Worried
q81	0.685507	0.971163	0.682446	0.969140	Allows Me Times Off to be with Family Friend
q82	**-.465722**	**0.972607**	**-.465288**	**0.971139**	**Discourages Me from Interacting with Others**
q83	0.860060	0.970830	0.857784	0.968826	Helps Me to Achieve Goals
q84	**-.621726**	**0.973200**	**-.618555**	**0.971399**	**Does not care whether I take care of Myself**
q86	0.807549	0.970904	0.804924	0.968921	Respects My Need for Rest Relaxation
q87	0.859060	0.970807	0.856368	0.968828	Understands My Unique Situation
q88	-.570444	0.973384	-.565120	0.971308	Has No Idea How My Job Affects My Life
q89	0.852532	0.970799	0.850215	0.968839	Is concerned about how I view things
q90	0.879022	0.970746	0.876205	0.968793	Knows what is important to me
q91	0.886828	0.970724	0.883339	0.968780	Acknowledges my inner feelings
q92	0.890577	0.970710	0.887191	0.968773	Helps me to cope with Job stress
q93	0.871355	0.970771	0.869557	0.968805	Respect for things having meaning to me
q94	**-.631320**	**0.973554**	**-.626942**	**0.971413**	**Out of touch with my work world**

Legend: Deleted variables (32) in bold black font did not meet minimal factor loading at 0.60 or higher on Factor 1.

Reduction to 25-Item Survey. In the prior steps only 32-survey items were removed, resulting in 59-survey items remaining. Recall from the interpretation of the factors, one-factor was retained and had high internal consistency indicating that all items reflected a relatively homogenous construct (*caring behaviors*). Additionally, many nurses (N= 377, 35%) who agreed to participate in the study failed to complete the

survey. Therefore, reducing the survey instrument to a more acceptable 25-item survey was amendable to reduce participant burden in completing the CAT-adm© survey (DeVellis, 2012). The decision to reduce the survey instrument was jointly made by the dissertation committee, with a limit of 25-items for the final scale (Wolverton, Weaver, McDaniel, Duffy, & Lasiter, 2016). Through a random selection process, 25-items were selected from the 59 items retained as comprising Factor 1 (*Caring Behaviors*). Randomly selecting items eliminated the potential for investigator bias and ensured that a representative sample of items was obtained. Cronbach alpha was then performed on the reduced set of 25-survey items. The Cronbach alpha (α= .98) was excellent for the reduced 25-item survey instrument. See the finalized 25 items on the CAT-adm instrument in Appendix H.

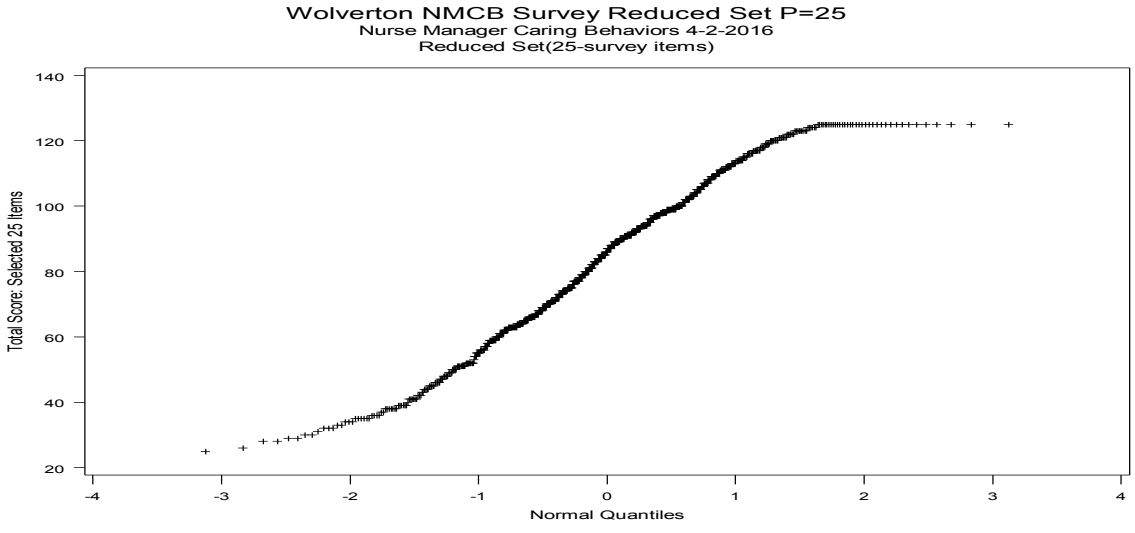
Research Question 4 - What are staff nurses' perceptions of nurse manager caring behaviors?

The last research question addresses the staff nurses' overall perceptions of nurse manager caring behaviors. Univariate analysis of the reduced 25-item CAT-adm© survey was performed to answer Research Question 4. Univariate analysis reveals the distribution of staff nurses perceptions of nurse manager caring behaviors. Measures of central tendency, dispersion and normality were examined. Participants were asked to answer each survey question using a Likert-type scale from 1-5 (1=never, 2=rarely, 3=occasionally, 4=frequently, 5=always). For the 25-item survey, the range of possible scores is therefore 25-125. Lower scores indicated less caring behaviors and higher scores indicated greater caring behaviors; the higher the score the more the staff nurses perceived his or her nurse manager demonstrated caring behaviors.

Measures of Central Tendency. The range of possible scores was 25-125. The mean of the 703 participants who answered the reduced CAT-adm© 25-Item Survey was 83.79 with a standard deviation (SD) of 25.93.

Measures of Dispersion. Measures of dispersion such as standard deviation reveal how observations deviate from the mean. Skewness and Kurtosis also reflect dispersion by showing how the observation deviates from a normal distribution. For a normal distribution, Kurtosis should be < 3.0 and Skewness should be near zero (Burns & Grove, 2009). The Kurtosis is -9019423 and Skewness is -.191937 in this set of observations indicating normal distribution. The negative Skewness value indicates a slight skew left. This is most likely due to extreme high scores in the data set (range of scores is from 25 to 125). In Figure 2 the Q-Q Plot is shown. The Q-Q plot (Quantile-Quantile) is a scatterplot that assesses if a set of data plausibly came from a normal distribution versus the sample distribution. If both sets of sets of data (expected versus actual) the points would form a line that's roughly straight (Park, 2002-2006).

Figure 2. CAT-adm© 25-Item Survey Q-Q Plot



Test of Normality. The four tests for normality and corresponding P-values test the null hypothesis that the observations are normally distributed. The significant P-values shown in Table 13 below indicate the observations were not normally distributed; consequently the null hypothesis was rejected (Park, 2002-2006). Concluding the observations did not have a normal distribution.

Table 13. Four Tests for Normality

Tests for Normality				
Test	*Statistic*			*p Value*
Shapiro-Wilk	*W*	0.969147	*Pr < W*	<0.0001
Kolmogorov-Smirnov	*D*	0.056223	*Pr > D*	<0.0100
Cramer-von Mises	*W-Sq*	0.591193	*Pr > W-Sq*	<0.0050
Anderson-Darling	*A-Sq*	4.400479	*Pr > A-Sq*	<0.0050

In summary the measures of normality and dispersion indicated the observations were not normally distributed. Total composite scores for the survey ranged from 25-125. The mean of the 703 participants who answered the reduced CAT-adm© 25-Item Survey was 83.79 with a standard deviation (SD) of 25.93. The SD demonstrated a wide variation of scores from the mean. The mean of 83.79 could indicate a moderate level of caring behaviors as perceived by the staff nurses. However, since the observations did not have a normal distribution to conclude anything further would require additional research.

CHAPTER FIVE

DISCUSSION

The CAT-adm© is a survey instrument that was developed to measure nurse manager caring behaviors; however it lacked vigorous psychometric testing. Therefore, the purpose of this descriptive study was to conduct psychometric testing of CAT-adm© survey to evaluate survey instrument validity and reliability for measuring staff nurses' perceptions of nurse manager caring behaviors. This chapter will focus on the findings of this research study and address the implications of the study based on data obtained from each of the specific aims and research questions. Limitations of the study are identified. Implications for health care administrators, clinical practice, nursing education, and future research are suggested.

Demographics and Sample Characteristics

Sample

The sample for this study was staffing nurses from three states in the Midwestern, Midatlantic and Southern Regions of the U.S. who were currently working in acute health care hospitals. Although 1143 staff nurses participated in the study, only 703 (61%) of the staff nurses completed the CAT-adm© survey. DeVellis (2002) suggested a sample size of 5-10 participants per survey item is adequate for psychometric testing (n=940 was sought). Using the formula mentioned in chapter four, a sample size of 1045 was needed (estimating a 10% increase to obtain 940 participants.). In this study 91 survey items were used as a result of an administrative error in the distribution of the survey.

Resulting in 7.7 participant responses per survey item (91*7.7=*n*701). Therefore the sample size was adequate in this study.

The majority of the staff nurse participants were white, not Hispanic/Latino, and female. Staff nurses who participated in the study were between the ages of 25-64 (19.35-25.04%), held certification in some area of nursing practice, and were BSN (67.85%) or higher. Years of experience as an RN the two largest categories were between > 5 to 10 yrs (20.48%) and >25 yrs (20.77%). Most of the staff nurses that responded to the survey worked in either Community (44.8%) or Academic (53.2%) hospitals and worked in adult units. These demographics are consistent with national statistics of registered nurses across the United states ("Facts About the Nursing Workforce," 2010; "The U.S. Nursing Workforce: Trends in Supply and Education," April 2013).

Duration of Time Worked. The three largest categories for duration of time worked were combined (greater than 1 year to 10 years) and comprised 454 (65%) staff nurses in this study. The longest duration of time staff nurses were employed on their current unit was between >1-3yrs (27.74%). Duration of time is important for the nurse manager and staff nurses to establish a caring relationship (Duffy, 2013) Comparing the duration of time staff nurses are employed on a unit and the association to their perception of caring was not explored. Future studies exploring the relationship between duration of time employed (unit level) and caring perceptions could be informative to substantiate the time is needed to establish a caring relationship between the nurse manager and staff nurse.

Based on the literature reviewed for this study, the role of the nurse manager was pivotal to staff nurse retention, satisfaction, and creating a healthy work environment.

Hospital administrators were concerned about retaining nurses because of the high cost of hiring new nurses (Duffield et al., 2011; Force, 2005; Shirey, 2006b). The relationship between nurse manger-staff nurse caring relationships and staff nurse retention was not measured in this study. Nurse managers who create a positive work environment through establishing a caring relationship with staff nurses may influence staff nurses' decisions about staying or leaving (Duffy, 2013; Longo, 2011; Veronesi, 2001). Additionally, the contribution of nurses who have worked a relatively short period of time in their respective hospitals is important because this is a key time when nurses are considering employment in other hospitals.

Having a valid and reliable tool (CAT-adm© survey) to measure staff nurses' perceptions of nurse manager caring behaviors can provide healthcare administrators with valuable information. Healthcare administrators who desire to create a culture of caring may use the reduced 25-item CAT-adm© survey to conduct correlation studies to examine the relationship between the caring behaviors of nurse managers and staff nurse retention, engagement, satisfaction, and specific patient outcome indicators such as patient satisfaction. Together, healthcare administrators and nurse managers can use the results of the CAT-adm© surveys in their organizations to better understand staff nurses perceptions of nurse manager caring behaviors. These results can be used to guide leadership development and increase awareness of nurse manager caring behaviors that may impact staff nurse decisions to seek employment elsewhere or remain employed and stay on their unit.

Professional Practice Model (PPM). PPMs are developed in hospitals with an underlying disciplinary framework, reflect the hospital mission and values, and are

theorized to positively impact patient care delivery systems and other elements within the health care system (Duffy, 2016). Staff nurses were asked if they knew whether their employing institution had a PPM and, if so, to describe the model. Over half (59.6%) of the nurses in this study were unsure if they had a PPM and furthermore, few staff nurses could label or describe their PPM. Of the staff nurses who labeled their PPM, the most frequent labels were quality caring model; relationship-based care, and patient-centered care. These labels were offered by nurses who worked in one specific hospital and had adopted a theoretical framework for their PPM (Duffy, 2013). These data require further investigation into the uptake and impact of PPM within hospitals that incorporate practice models system wide.

Three of the seven hospitals in this study had Magnet designation and two of the three hospitals had been re-designated multiple times. One of the Magnet criteria required for designation is that institutions must incorporate a professional practice model to ground exemplary professional practice. The inclusion of the concept of caring into PPMs could potentially impact the nurse manager-staff nurse relationship, since the full application of a PPM defines nurses' roles with patients and other members of the health care team and has as its aim the achievement of important positive outcomes. As more staff nurses feel cared for by their managers, increased work satisfaction, intent to stay, and retention may result. Employing the CAT-adm© survey as a valid instrument for conducting further research related to the influence of a caring-based PPM on nurse managers' caring behaviors are an interesting implication of this study.

Specific Aims and Research Questions

Psychometric research is used in the construction and validation of assessment instruments (DeVellis, 2012; Netemeyer et al., 2003). Two commonly used statistical techniques are Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). Both CFA and EFA are powerful techniques that examine the interrelationships among large numbers of variables (items) that are closely linked (factors). Both CFA and EFA techniques were used to answer the aims and research questions in this study.

The first aim was to evaluate the construct validity of the CAT-adm© survey by describing the factors that account for variance in staff nurses' perceptions of nurse manager caring behaviors. To address this aim, the research question, "What is the factor structure of the observed data?" was asked. More specifically to evaluate if the model fits the data as proposed in this study. The null hypothesis was an eight-factor solution fits the data. To answer this aim and question, a CFA technique was chosen because an a priori relationship pattern was determined from the quality caring theoretical model that informs the instrument under study (DeVellis, 2012; Duffy, 2013).

The first step in CFA is to determine model fit. Considering the eight caring factors that are described in the Quality-Caring Model® (QCM®) theoretical framework, an 8-factor solution was sought. Based on the statistical findings, the 8-factor model proposed did not statistically fit the data and therefore the null hypothesis was rejected. The next step was to conduct an EFA to identify an alternative, plausible factor structure based on the observed data.

Sampling adequacy was determined to be excellent using the KMO statistic (0.99 for this study). Meaning EFA was appropriate for the variables observed. The number

of factors to retain was evaluated by comparing the Eigenvalues of the observed data set produced by EFA with random data sets that parallel the data (observed data set of this study). This technique is called Parallel Analysis (PA). The Eigenvalues of the actual data set were then compared to the Eigenvalues derived from the random data sets. The mean Eigenvalues from the random data served as the comparison baseline. Using this methodology two factors were retained.

Reviewing the items that loaded on Factor 1, led to the conceptual interpretation of the underlying construct *Caring Behaviors*. This construct is congruent with the QCM® major tenet of caring and also central to the nurse manager-staff nurse caring relationship. The one-factor solution representing *Caring Behaviors* seems logical since in the work environment, nurse managers frequently use multiple behaviors simultaneously. For example, "showing concern for me" may also be displayed when "checking with me to make sure I understand what is going on in the workplace." Furthermore, the term, *caring behaviors*, may be easier to comprehend and eventually actualize in the work setting.

The second aim was to estimate internal consistency. To address this aim the research question, "What is the internal consistency reliability of the CAT- adm© survey?" was asked. To answer the second study aim and question, a Cronbach alpha was calculated to measure internal consistency reliability of the CAT-adm© survey. Cronbach alpha of the CAT-adm© survey was .97 using CFA, .99 for the 59-item reduction of variables that loaded more substantively and strongly on Factor 1, and 0.98 for the final reduced 25-item CAT-adm© survey. Excellent internal consistency

reliability was demonstrated through steps of in both CFA and EFA techniques and also consistent with Duffy's 2008 study (α= .942). The CAT-adm© survey items repeatedly shows high levels of internal consistency with each iteration of the CAT-adm© survey tested. Items composing a survey should show high levels of internal consistency meaning the survey items are interrelated designed to measure a single concept (Netemeyer et al., 2003). In this study Coefficient Alpha has consistency remained high (α= >.90), and for the reduced 25-item CAT-adm© survey, the Coefficient alpha was .98, indicating the 25-item CAT-adm© survey can be used in further research studies to consistently assess nurse manager caring behaviors.

The third aim was to conduct item reduction analysis to reduce administrative and participant burden. To answer this aim the research question was asked, "What subset of items can be reduced while maintaining an acceptable factor structure?" Through a series of procedural steps the CAT-adm© was reduced to a 25-item survey instrument. Having a 25-item survey instrument reduces both administrative and participant fatigue/burden. As seen in this study, the 91-item survey that was used in this study demonstrated potential survey fatigue. Of the 1143 (61%) staff nurses that voluntarily consented to participate in the survey, only 703 staff nurses completed the survey. After review of the response pattern on the survey instrument, it became clear that those who did not complete the survey simply stopped responding to the items around question number 75 before they made it to the end of the survey. No specific random trend of non-response was noted. In anticipation of response fatigue or interruption, the staff nurses were given the opportunity to exit the survey and resume at a later time. A reentry code was sent to their secure emails and details about how to use the

code to restart the survey was provided. An email reminder was also provided that the reentry option was available to those who had to close the survey before completion was sent to the secure email addresses. Not one staff nurse used this survey reentry option. Response fatigue is a phenomenon that has been identified (Netemeyer et al., 2003) in lengthy surveys. Reduction of the original 94 item tool to a 25-item CAT-adm© survey may boost survey response rate, allowing for increased use in various sites. Having a survey instrument that is of reasonable length reduces participant and administrative burden (DeVellis, 2012).

The fourth and final research question "What are staff nurses' perceptions of nurse manager caring behaviors? "drove the need for the study. To answer the fourth question, univariate analysis was used to reveal the distribution of staff nurses perceptions of nurse manager caring behaviors. Measures of central tendency, dispersion and normality were examined. Total scores ranged from 25-125. In this study, the total 25-item CAT-adm© survey mean for all survey items was 83.79 (SD 25.93). The mean of 83.79 may indicate moderate caring. The SD reflects a wide variation of observations from the mean. What needs to be studied further is to evaluate the distribution of the scores to determine the level of caring (low, moderate, high) and whether caring behavior scores are beneficial (meaningful) for related outcomes.

Healthcare administrators could use the 25-item CAT-adm© survey total composite score to evaluate whether nurse manager *caring behaviors* are associated with outcomes such as nurse retention, nurse job satisfaction, and patient satisfaction. Healthcare administrators can use individual 25-item CAT-adm© survey item mean scores to identify which interventions could use improvement. For example in this study

the means of three survey questions, q57 “Asks me how I think about nursing/healthcare.”, q58 “Provides me with literature about my work”, and q66 “Makes sure my co-workers know what I need” had means of 2.9, 2.8, and 3.0 respectively. The means for each survey item ranged from 1-5 (low to high). The range of means for all 25-survey items in this sample was 2.8-3.7. The means of the three survey questions above were on the low end of the survey items. These three questions reflect staff nurses perceptions of their manager frequency in caring behaviors associated with “appreciation”, “mutual problem-solving”, and “affiliation needs”. Healthcare administrators and nurse managers can evaluate the overall results as well as individual survey items to design education and leadership development programs to create a more caring culture. As a result of this study health care administrator, educators, and researchers now have a reliable and valid tool to test the outcomes of such educational interventions.

Study Limitations

External validity is concerned with the generalizability of the study findings (Burns & Grove, 2009). One limitation in this study was the location of where the study was conducted. The participants were recruited from three states in the Midwestern, Midatlantic and Southern Regions of the U.S. Conducting this study in other regions of the U.S. would improve generalizability. This is also true with the demographics of this study. Although the demographics were fairly comparable to the national statics for registered nurses overall, conducting this study in other regions of U.S. may increase the number of participants by gender (more males), and increased diversity related to race and ethnicity other than white. Another limitation of this study was the use of

convenience sampling. This sample may not represent the average population of interest and therefore may affect generalizability of the results. Designing a study using random selection of participants would improve the generalizability of the findings.

Other limitations could be the participant's perception of caring, assessing caring behaviors through electronic format versus face to face, and the influence of other factors in the work environment that may influence the participant's responses.

Future Research and Implications

This study was conducted to systematically test the reliability and validity of the CAT-adm© survey. Based on gaps identified by the review of literature and having the 25-item CAT-adm© survey, a valid and reliable instrument, to use in future research can be conducted in the following areas:

1. Studies that include more diverse samples using the reduced 25-item CAT-adm© survey to further demonstrate its reliability and validity, participant burden, and acceptability in the staff nurse work environment.
2. Correlational and multivariate studies of nurse manager caring behaviors related to various nurse outcomes (e.g., work satisfaction, engagement, intent to stay, retention) and patient outcomes (satisfaction, falls, pressure ulcers, infections). Examples:
    a. Does a higher composite score on the 25-item CAT-adm© surveys positively correlate with patient satisfaction scores?
    b. Do higher CAT-adm© survey composite scores correlate with higher staff nurse retention?

c. Do hospitals that have higher CAT-adm© survey composite scores use a theoretical framework embedded with caring behaviors versus those that do not?

d. Do hospitals with higher CAT-adm© survey composite scores have Magnet designation versus those that are not Magnet designated?

e. Do higher CAT-adm© survey composite scores correlate with positive nurse sensitive outcome measures such as falls, pressure ulcers, and infections rates.

f. Do higher CAT-adm© survey composite scores correlate with a healthy work environment (absence of lateral violence, presence of teamwork, manager support)?

g. Is there an association between CAT-adm© survey composite scores and selected outcomes measures (nursing turnover, satisfaction, or patient satisfaction)?

h. Correlation between CAT-adm© survey composite scores and nurse manager retention.

3. Intervention studies designed to improve nurse manager caring behaviors or improve the adoption of caring behaviors by nurse managers may prove valuable for healthcare administrators, educators, and nurse managers.
4. Studies designed to assess CAT-adm© survey nurse manager level of caring. Can the range of scores reflect low, moderate or high caring? Identify the levels of nurse manager caring (low, moderate, high) of the CAT-adm© survey.

5. Studies designed to test elements of the QCM®. This would be important to continue to authenticate the theoretical framework.

Study Implications

Implications of nursing administration, nursing practice and nursing education are presented below.

Implications for Nursing Administration

Healthcare administrators who are evaluating, exploring or chose to implement a PPM based on a caring framework can use the 25-item CAT-adm© survey to assess staff nurses perceptions of nurse manager caring behaviors. Healthcare administrators who create a culture of caring need to know the demographics of the workforce and the overall staff nurse perception of caring behaviors. Knowing this information can lead to positive change in how policies, procedures, job descriptions and other organizational structures can be embedded with caring attributes. Caring attributes can be derived from the CAT-adm© survey individual survey items and theoretical framework used for this study.

Healthcare administrators can use the CAT-adm© survey to gain tremendous insight about the perceptions staff nurses have about their nurse manager caring behaviors and how caring relationships matter.

Implications for Nurse Manager Practice

The nurse manager caring relationship with staff nurses and its impact on nurses' retention, satisfaction, and on the nurses' caring relationship has not been well studied. Using the 25-item CAT-adm© survey, nurse managers can assess their own caring behaviors as perceived by their staff nurses. By knowing what staff nurses

perceive as caring, nurse managers could design strategies to insert caring behaviors in their relationships with staff nurses.

Intervention studies can be designed based on the CAT-adm© survey item results. Interventions focused on the caring behaviors can be embedded into on-line learning modules, leadership workshops, simulation lab scenarios, and interactive groups allowing nurse managers to be engaged in and practice their learning. Simulation and group practice provides the necessary time to develop and perfect caring behaviors that the nurse managers wish to demonstrate in their interactions with staff nurses. The 25-item CAT-adm© survey could be used to measure the effectives of these interventions (e.g. pre-post intervention).

Nurse managers can use the results of the 25-item CAT-adm© survey to perform quality improvement projects focused on tactics to improve their caring behaviors and building on their positive (survey item means >3.0 or higher) scores. Creating a culture of caring requires the nurse manager to have self-awareness of their caring behaviors and understand the importance of their caring relationship with their staff nurses (retention, satisfaction, and nurse caring behaviors with patients).

Implications for Education

Educators in the healthcare environment, academic institutions, and proprietary organizations may use the 25-item CAT-adm© survey to develop and measure program outcomes when assisting nurse managers to understand and improve the caring relationships. Intentionally selecting a theoretical framework, such as the QCM® used in this study, to guide the development of the program would be beneficial. It is essential to embed caring behaviors in designing workshops, in-

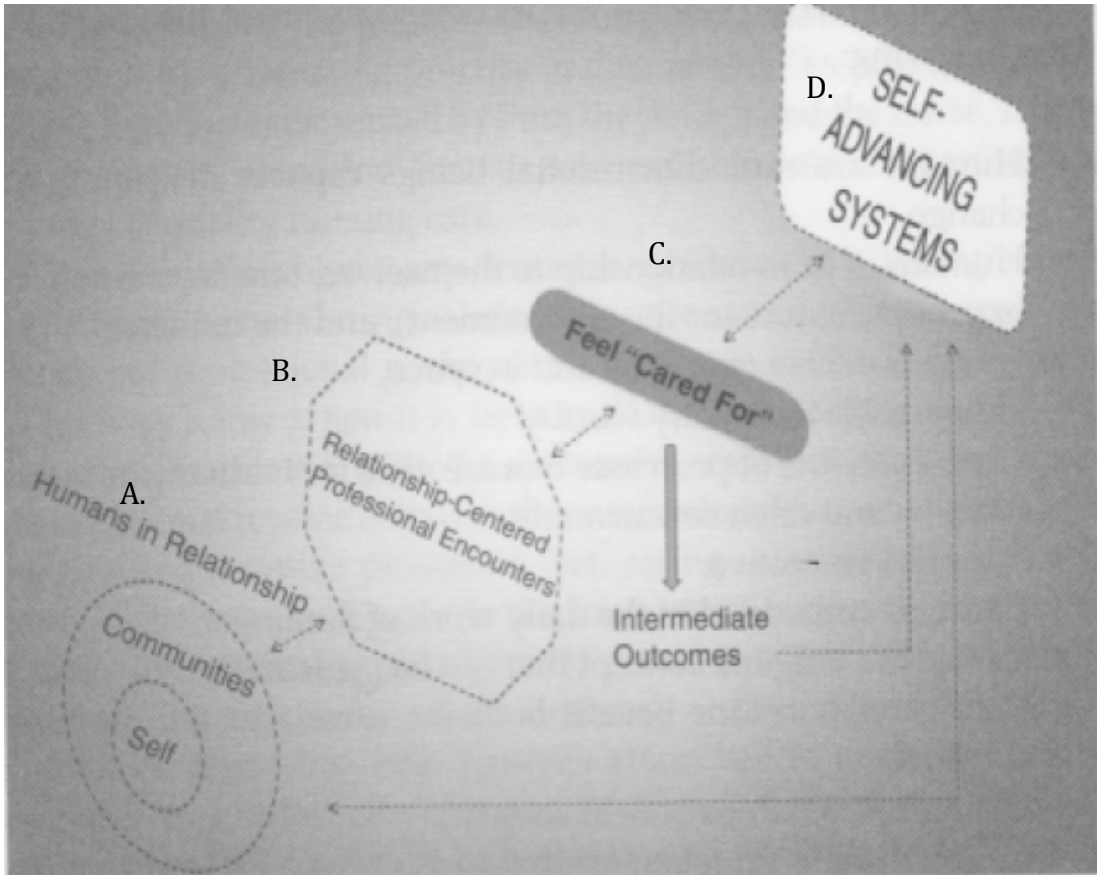
services, didactic courses, and simulation labs used for increasing knowledge. Activities related to quality caring behaviors could impact positive caring relationships within the entire system and between nurses and patients.

Conclusion

In conclusion, this study was designed to evaluate the psychometric properties of the CAT-adm© survey. The Quality-Caring Model® (Duffy, 2013) served as the theoretical guide. An eight-factor solution was sought in this study consistent with the eight caring factors of the QCM®. Although the CFA did not demonstrate an eight-factor solution as postulated and the EFA supported a two-factor solution, only Factor 1 was retained and labeled conceptually. Thus, instead of an eight-factor solution, it was determined that there was a one-factor solution or one dimension. This dimension was labeled *Caring Behaviors*. The nurse manager caring behaviors support the theoretical concept of *relationship-centered professional encounters* as documented in the Quality-Caring Model ©(QCM) that caring is a relational behavior that nurse managers engage in with staff nurses. Based on the CFA and EFA statistical techniques that were used in this study, there is now evidence supporting that the CAT-adm© survey has acceptable reliability and validity. The original CAT-adm© survey was reduced to 25 items while maintaining adequate internal consistency. The 25-item CAT-adm© survey is less of a burden to participants who complete the survey, and reduces survey fatigue and administrative burden compared to the full questionnaire. The staff nurses' perceptions of nurse manager caring behaviors mean composite score for the 25-item CAT-adm© survey indicated, on average, a moderate level of caring. However, further studies need to be conducted to determine what denotes low, moderate and high levels of caring.

Appendix A

Duffy's Quality-Caring Model® 2013 – Concepts: a) Humans in Relationship, b) Relationship-Centered Professional Encounters, c) Intermediate Outcome – Feeling "cared for", and d) Self-Advancing Systems



(Duffy, 2013, pp. 191-195)

Appendix B

Caring Assessment Tool – Administration Version

Nurse Survey Questions

Questions	
1. Listens to me.	2. When appropriate, shares personal information with me.
3. Accepts me as I am.	4. Expresses human emotions when they are with me.
5. Treats me kindly.	6. Responds honestly to my questions.
7. Ignores me.	8. Initiates conversations with me.
9. Answers my questions.	10. Checks up on me.
11. Includes me in his/her discussions.	12. Looks me in the eye when he/she talks to me.
13. Respects me.	14. Refuses to tell me aspects about my work when I ask.
15. Is more interested in his/her own problems.	16. Pays attention to me when I am talking.
17. Pays attention to me.	18. Acts as if he/she disapproves of me.
19. Enjoys working with me	20. Encourages me to talk about whatever is on my mind.
21. Uses my name when he/she talks to me.	22. Is patient with me even when I am difficult.
23. Is available to me.	24. Is interested in information I have to offer about the work
25. Seems interested in me.	26. Talks about me openly in front of other staff members.
27. Has no time for me.	28. Accepts what I say, even if it is negative.
29. Helps me to believe in myself.	30. Seems annoyed if I speak my true feelings
31. Keeps me informed.	32. Is aware of my feelings.
33. Fails to keep promises he/she has made to me.	34. Does not want to talk to me.
35. Encourages me to take care of myself.	36. Allows me to talk about my true feelings without any risk to my job.
37. Supports me with my beliefs.	38. Questions me about my work.
39. Encourages me to ask	40. Help me set performance

questions.	goals that I am able to do.
41. Helps me see some good aspects of my situation.	42. Helps me find solutions regarding my work problems.
43. Encourages me to advance in my career.	44. Deals with my work problem/s in ways that are impractical for me.
45. Anticipates my needs.	46. Helps me with all of my work problem/s, not just parts of them.
47. Respects my need for privacy.	48. Uses management terms that I don't understand.
49. Makes sure my co-workers know what I need.	50. Teaches me about nursing/healthcare.
51. Knows what to do in an emergency.	52. Helps me explore questions to ask about my work life.
53. Never asks what I need.	54. Allows me to choose the best time to talk about my concerns
55. Protects me from situations where I could get harmed.	56. Openly shows concern for me.
57. Knows a lot about me	58. Is concerned about my family.
59. Spends time with me.	60. Never shows any emotion.
61. Makes me feel safe.	62. Asks me about how I like to do my work.
63. Allows my family to be involved in my work decisions.	64. Helps me deal with my bad feelings.
65. Limit or interferes with my basic routine practices.	66. Discourages me from asking questions.
67. Makes sure I get the breaks I need.	68. Is out of touch with my work world
69. Monitors my activities.	70. Shows respect for those things that have meaning to me.
71. Helps me feel special.	72. Has no idea how this job is affecting my
73. Keeps me challenged.	74. Is concerned about how I view things.
75. Makes me wait a long time for appointments.	76. Knows what is important to me.
77. Helps me feel less worried.	78. Acknowledges my inner feelings.
79. Allows me time off to be with my family/friends.	80. Helps me cope with the stress of my job.
81. Discourages me from	82. Helps me deal with difficult

interacting with others.	situations.
83. Helps me achieve my work goals.	84. Asks me how I think my work is going.
85. Doesn't care whether I take care of myself.	86. Helps me explore alternative ways of dealing with my work problem/s.
87. Helps me feel included	88. Asks me how I think about nursing/healthcare.
89. Respects my need for rest and relaxation	90. Checks with me to make sure I understand what is going on in the workplace
91. Understands my unique situation.	92. Makes me feel as stress-free as possible.
93.	94. Provides me with literature about my work.

Appendix C

Staff Nurse Demographic Questionnaire

Directions: please fill in the requested information or select the best answer.

1. What type of hospital do you work for?

    - Community Hospital
    - Academic Hospital (teaching)
    - Rural Hospital

2. What is the name of your hospital?

    (Participants select their hospital from a drop down list)

3. How many years have you worked as a Registered Nurse (RN)?

    - Six months to one year (6 months - 1 yr.)
    - Greater than one year to three years (>1-3 yrs.)
    - Greater than 3 years to 5 years (>3-5 yrs.)
    - Greater than 5 years to 10 years (>5-10 yrs.)
    - Greater than 10 years to 15 years (>10-15 yrs.)
    - Greater than 15 years to 20 years (>15-20 yrs.)
    - Greater than 20 years to 25 years (>20-25 yrs.)
    - Greater than 25 years

4. How long have you worked in your current unit?

    - Six months to one year (6 months - 1 yr.)
    - Greater than one year to three years (>1-3 yrs.)
    - Greater than 3 years to 5 years (>3-5 yrs.)
    - Greater than 5 years to 10 years (>5-10 yrs.)
    - Greater than 10 years to 15 years (>10-15 yrs.)
    - Greater than 15 years to 20 years (>15-20 yrs.)
    - Greater than 20 years to 25 years (>20-25 yrs.)
    - Greater than 25 years

5. Indicate which general population of patients you care for?

    - Newborn
    - Pediatric
    - Adult

6. Describe what type of unit you work on?

    - Medical
    - Surgical
    - Medical/surgical
    - Step-down
    - Progressive care
    - Critical care
    - Transplant
    - Pediatrics
    - Intensive care
    - Perioperative
    - Maternal-child (women's health)
    - Emergency department
    - Psychiatric/mental health
    - Other

7. What is your highest level of education?

    - RN Diploma
    - Associates Degree Nursing
    - Bachelor Degree Nursing
    - Bachelor Degree Non-nursing
    - Master Degree Nursing
    - Master Degree Non-nursing
    - Doctorate Degree
    - Some graduate classes

8. Do you any professional certifications? (Examples: CEN, CCRN, CMSRN, etc.)

    - Yes
    - No

    If you answered yes to the above question, please select type of certification

    - Cardiac medicine certification (CMC)
    - Cardiac surgery certification (CSC)
    - Critical care RN (CCRN)
    - Certified emergency nurse (CEN)

- Certified dialysis nurse (CDN)
- Certified nephrology nurse (CNN)
- Certified pediatric nurse (CPN)
- Certified nurse OR (CNOR)
- Certified neuroscience RN (CNRN)
- Certified post anesthesia nurse (CPAN/CAPA)
- Certified pediatric hematology oncology nurse (CPHON)
- Certified rehabilitation registered nurse
- Certified wound care nurse (CWCN)
- Certified wound and ostomy care nurse (CWOCN)
- Certified gastroenterology RN (CGRN)
- Gerontological nurse (RN-BC)
- Medical-surgical nurse (RN-BC)
- Pediatric nursing (RN-BC)
- Neonatal intensive care (RN-BC)
- Oncology certified nurse (OCN)
- Orthopedic nurse certification (ONC)
- Progressive care certified nurse (PCCN)
- Sexual assault nurse examiner adult/adolescent
- (SANE-A)
- Sexual assault nurse examiner pediatric (SANE-P)
- Other
- (Choose all that apply)

9. What is your current age?

    - Under 25 years old (< 25)
    - 25 to 34 years old (25-34)
    - 35 to 44 years old (35-44)
    - 45 to 54 years old (45-54)
    - 55 to 64 years old (55-64)
    - Over 65 years old (65+)

10. What is your gender?

    - Male
    - Female

11. What is your ethnicity?

    - Hispanic / Latino
    - Not Hispanic / Latino

12. What is your rate?

- o American Indian or Alaska Native
- o Asian
- o Black or African American
- o Native Hawaiian or Other Pacific Islander
- o White

(Choose all that apply)

13. What is your professional practice model (PPM)?

- o We have a PPM model (PPM)
- o We do not have a PPM
- o Unsure
- o The PPM at my hospital is? _____

Note: Staff Nurse Demographic Questionnaire was developed specifically for the purposes of this study

Appendix D

Staff Nurse Informed Consent Statement For:

Staff Nurse Perceptions of Nurse Manager Caring Behaviors Survey

You are invited to participate in a research study of staff nurse perceptions of nurse manager caring behaviors. You were selected as a possible participant because you are a registered staff nurse (RN) in an acute care hospital setting. Please read this form. Should you have any questions please contact the investigator conducting this study prior to agreeing to participate in this study. After reading this informed consent statement and proceeding to the Staff Nurse Demographic Questionnaire and CAT-adm© survey will serve as your consent to participate. Cheryl Lynn Wolverton, a PhD candidate with the Indiana University School of Nursing, Indianapolis, IN, is conducting this study.

STUDY PURPOSE

The purpose of this study is to conduct psychometric testing of CAT-adm© survey to determine the validity and reliability of the instrument. The CAT-adm© survey is designed to measure staff nurse perceptions of nurse manager caring behaviors. Three specific aims are to: 1) determine construct validity of the CAT-adm© survey by describing the factors that account for variance in staff nurses' perceptions of nurse manager caring, 2) estimate internal consistency, and 3) conduct item reduction analysis to reduce administrative and participant burden.

NUMBER OF PEOPLE TAKING PART IN THE STUDY

If you agree to participate, you will be one of 940 RNs who will be participating in this research.

PROCEDURES FOR THE STUDY

If you agree to be in the study you will do the following things: 1) read the Staff Nurse Informed Consent Statement, 2) click on the link supplied in your email that will take you to the Staff Nurse Demographic Questionnaire and the Caring Assessment Tool – Administration (CAT-adm©) survey. Participation is voluntary and you may withdraw at any time.

RISK OF TAKING PART IN THE STUDY

While in the study, the risks are: Completing the Staff Nurse Demographic Questionnaire and being uncomfortable with answering the questions on the CAT-adm© survey, and risk of loss of confidentiality.

Measures that will be used to minimize the risks listed above are: If you are uncomfortable completing the Staff Nurse Demographic Questionnaire or CAT-adm© survey you can decide to withdraw at anytime or not answer a specific question. Assigning a number to each participant and using a secure database software program to administer the Staff Nurse Demographic Questionnaire and CAT-adm© survey will address the possibility of loss of confidentiality. Only the Principal Investigator (PI) and co-investigator will have access to the secure database program. Dissemination of the

findings will be identified only as group data. The computer used to store the data is protected with both software and hardware firewalls and is password protected. All data access will be limited to the principal investigator and co-investigator for study purposes only.

BENEFITS TO TAKING PART IN THE STUDY

The benefits to participating that are reasonable to expect are those received as professional RNs for contributing to the body of knowledge on the staff nurse perceptions of nurse manager caring behaviors. This study will also determine the robustness of the CAT-adm© survey that can be used in future studies to provide hospitals and nurse manager with valuable information that can affect nurse manager behaviors and positively influence staff nurses retention, satisfaction and ultimately quality of care delivered to patients.

CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. Absolute confidentiality cannot be guaranteed. Your personal information may be disclosed if required by law. Your identify will be held in confidence in reports in which the study may be published and in databases in which results may be stored. Dissemination of the findings will be identified only as group data. The computer used to store the data is protected with both software and hardware firewalls and is password protected. All data access will be limited to the principal investigator and co-investigators for study purposes only.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigators and his/her research associated institutional review boards (IRB), and as required by law state or federal agencies, specifically the Office of Human Research Protections (OHRP), and the Food and Drug Administration (FDA) [for FDA-regulated research and research involving positron-emission scanning], the National Cancer Institute (NCI) [for research funded or supported by NCI], the National Institutes of Health (NIH) [for research funded or supported by NIH], etc., who may need to access your research records.

COSTS

There are no costs to you for taking part in this study.

PAYMENT

You will not receive payment for taking part in this study

FINANCIAL INTEREST DISCLOSURE

There is no financial benefit to any individual or organization for participation in this study.

CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about this study or a research-related concern, contact the investigator who serves as the co-investigator of this study, Cheryl Lynn Wolverton at _____. If you can not reach the co-investigator during regular business hours (i.e. 08:00-5:00PM0,

please call the IUPUI Office of Research Compliance Administration at (317)-278-3458 or (800) 696-2949.
In the event of an emergency, you may contact Cheryl Lynn Wolverton at_____.
For questions about your rights as a research participant or to discuss problems, complains or concerns about this research study, or to obtain information or offer input, contact the IUPUI Research Compliance Administration office at (317) 278-3458 or (800) 696-2949.

VOLUNATRY NATURE OF THE STUDY
Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect our current or future relations with your employer.

PARTICIPANT CONSENT
In consideration of all of the above, by proceeding the Staff Nurse Demographic Questionnaire and CAT-adm© survey you are giving your consent to participate in this study.

COPY OF INFROMED CONSENT STATEMENT

You may print a copy of this informed consent statement for your records.

Appendix E

Organizational Letter of Agreement to Participate – Chief Nurse Executive

Date
Name
Address

Dear Chief Nursing Executive,

Greetings to you and your staff nurses. My name is Cheryl Lynn Wolverton and I am a PhD nursing student at the Indiana University School of Nursing, Indianapolis IN. As I begin my dissertation research, I'm requesting your assistance.

My study is focused on measuring staff nurse perceptions of nurse manager caring behaviors. In times of uncertainty in the health care environment, the relationship between the nurse manager and his/her staff is critical. Information gained from this study will provide leaders, like you, with valuable information that can drive changes in nurse manager behaviors and positively influence staff nurse retention, satisfaction, and ultimately impact the quality of care delivered to patients.

There is an existing tool to measure staff nurse perceptions of nurse manager caring behaviors. The purpose of this study is to conduct psychometric testing of CAT-adm© survey to determine the validity and reliability of the instrument. The CAT-adm© survey developed by Jo Ann Duffy, PhD, FAAN is designed to measure staff nurse perceptions of nurse manager caring behaviors.

Study participants will be staff nurses (Registered Nurses) in your organization. Staff nurses will be asked to complete the Staff Nurse Demographic Questionnaire and the CAT-adm© survey through an easy to use, secure, web-based database management tool for capturing, using, and sharing research data. The web-based tool is available from the Indiana Clinical and Translations Sciences Institute (CTSI)("Indiana University.REDCap. Indiana CTSI Collaboration in Biomedical/Translational Research (CBR/CTR) "). To set-up this web-based survey, I will need a contact person within your organization. This contact person is needed to send all in-patient staff nurses the link to the Staff Nurse Demographic Questionnaire and CAT-adm© survey. Only secure organizational staff nurses email addresses will be used.

Our Institutional Review Board (IRB) of the Indiana University-Purdue University Indianapolis (IUPUI) requires approval from the Chief Nurse Executive of the organization in which this study will be conducted. As per IRB standards confidentially of your organization and the staff nurses will be maintained. Pending review and approval from the IRB I will contact you or your designee to begin this study.

Your support is very important. If you agree for your organization to participate in this study please respond by returning the bottom portion of this letter to me.

I do hope you will agree to participate in this important study. Thank you in advance for your participation.

Sincerely,

Cheryl Lynn Wolverton, MSN, RN, NEA-BC
Indiana University School of Nursing, PhD graduate student
Email address: cwolvert@iupui.edu

Cheryl Lynn Wolverton MSN, RN, NEA-BC
8025 Moore Rd
Indianapolis IN. 46278
cwolvert@IUPUI.edu

Dear Ms. Wolverton

You have my support to conduct your research study "Staff Nurse Perceptions of Nurse Manager Caring Behaviors" at our organization. My signature below indicates my support of this study and authorizes you to recruit staff nurses within our organization to participate in this study

_____
Name and Title/Position

_____
Signature Date Signed

_____
Name of Facility

The name of the contact person at our facility is:

_____

You may reach the designated contact person at the following address/email:

_____

_____

_____

Return the signed copy of this letter to my home address in the envelope provided. Or you can scan and email this letter to my email address below.

Cheryl Lynn Wolverton, MSN, RN, NEA-BC
Indiana University School of Nursing, PhD graduate student
Address omitted for publication purposes
Email address: cwolvert@iupui.edu

Appendix F

Invitation to Participate in a Nursing Research Study

YOUR OPINION MATTERS

Attention All Registered Nurses

Your opinion matters! Research is needed to gain knowledge about staff nurses perceptions' of nurse manager caring behaviors.

You will be receiving an email inviting you to participate in this important nursing research study.

- The **purpose of this study** is to gain knowledge on staff nurses perceptions' of nurse manager caring behaviors.

- **Information gained from the study** will be used determine if the survey used in this study accurately represents staff nurse perceptions of manager caring behaviors. Nurse manager caring behaviors may influence nurse job satisfaction and nursing retention.

- **Participation is voluntary** and the identity of the participants will be kept totally confidential. The individuals and organizations that participate in the study will not be identified in any way, even if the results of the study are published.

- **You will be receiving an email** inviting you participated in this study the week of _____. Email reminders will be sent approximately every two weeks until closure of the study.

- The **benefits** to you for participating in this study are:
    - To validate the survey tool used in this study (does the tool measure what it is intended to measure).
    - The results of the study will assist nurse managers in knowing what nurse manager caring behaviors are important to **YOU.**

- **Thank you** for taking time to participate in this study.

Appendix G
Path Diagram of Measurement Model: Factor Mapping to Survey Items
Caring Assessment Tool – Administration Version (CAT - adm©)

Latent Variable (Factor)	Caring Factor	Factor Loading	Observed Variables (Item Numbers)	Residual (Measurement Error)
ξ **1**	Mutual Problem Solving	λ	Item Numbers (X) 16, 36, 41, 50, 53, 54, 56, 58, 59, 60, 61, 78 (Red denotes reverse coded items)	δ
ξ **2**	Attentive Reassurance	λ	Item Numbers (X): 1, 4, 5, 9, 12, 19, 24, 25, 37, 44, 46, 91 (Red denotes reverse coded items)	δ
ξ **3**	Human Respect	λ	Item Numbers (X): 2, 3, 7, 11, 13, 17, 32, 35, 40, 42, 52, 79, 93 (Red denotes reverse coded items)	δ
ξ **4**	Encouraging Manner	λ	Item Numbers (X): 15, 20, 21, 22, 27, 31, 39, 43, 47, 49, 62, 83 (Red denotes reverse coded items)	δ
ξ **5**	Appreciation of Unique Meanings	λ	Item Numbers: 8, 28, 45, 55, 57, 63, 87, 88, 89, 90, 94 (Red denotes reverse coded items)	δ
ξ **6**	Facilitating a Healing Environment	λ	Item Numbers: 48, 51, 65, 67, 69, 72, 74, 75, 76, 86, (Red denotes reverse coded items	δ
ξ **7**	Basic Human Needs	λ	Item Numbers: 18, 23, 29, 34, 64, 68, 70, 77, 80, 81, 84, 92 (Red denotes reverse coded items)	δ
ξ **8**	Affiliation Needs	λ	Item Numbers: 6, 10, 14, 26, 30, 33, 38, 66, 71, 73, 82, 85 (Red denotes reverse coded items)	δ

Note: Items inadvertently deleted from original 94-item CAT - adm© highlighted in yellow, negatively worded items in red font.

Appendix H

Revised 25-item CAT-Adm

Nurse Survey Questions

	Questions
1.	Keeps me informed.
2.	Allows me to choose the best time to talk about my concerns.
3.	Openly shows concern for me.
4.	Asks me about how I like to do my work.
5.	Helps me deal with my bad feelings.
6.	Expresses human emotions when they are with me.
7.	Is patient with me even when I am difficult.
8.	Is interested in information I have to offer about the work
9.	Accepts what I say, even if it is negative.
10.	Is aware of my feelings.
11.	Helps me find solutions regarding my work problems.
12.	Asks me how I think my work is going.
13.	Asks me how I think about nursing/healthcare.
14.	Provides me with literature about my work.
15.	Checks with me to make sure I understand what is going on in the workplace.
16.	Makes sure my co-workers know what I need.
17.	Makes me feel safe.
18.	Helps me feel special.
19.	Keeps me challenged.
20.	Allows me time off to be with my family/friends.
21.	Helps me achieve my work goals.
22.	Understands my unique situation.
23.	Is concerned about how I view things.
24.	Knows what is important to me.
25.	Acknowledges my inner feelings.

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CURRICULUM VITAE

Cheryl Lynn Wolverton

EDUCATION

2016	PhD – Nursing Science, Minor - Sociology Indiana University, Indianapolis, IN
1984	College of Nursing & Health, University of Cincinnati, Cincinnati, OH Master of Science in Nursing
1979	Indiana University School of Nursing, Indianapolis, IN. Bachelor of Science in Nursing

WORK EXPERIENCE

04/2012 - Current	Franciscan Saint Francis Health – Indianapolis Campus, Indianapolis, IN Director Critical Care Services Accountable for all operations involving the Adult Intensive Care Unit, Intermediate Care Unit, Acute Dialysis and Respiratory Care Department
01/1992 – Current	Indiana University School of Nursing – Indianapolis, IN Adjunct Faculty Provide Graduate Level mentorship in the service setting and lecturer at IUSON
01/2011 - 06/2011	Indiana University School of Nursing – Indianapolis, IN Research Assistant Accountable for rolling out a research study at an Indiana community hospital. Responsible for the data facilitation, collection, and management
05/2005 - 02/2011	Indiana University Health – Indiana University Hospital, Indianapolis, IN Clinical Director – Adult Critical Care Units Accountable for all operations involving six critical care units and system-wide Lift Team
05/1995 - 05/2005	Indiana University Health – Indiana University Hospital, Indianapolis, IN Clinical Manager – Medical Intensive Care Unit Managed operations – medical intensive care units, merged four units to optimize efficiency, cost and quality of care

03/2004 - 06/2004	Indiana University Health – Indiana University Hospital, Indianapolis, IN Interim Manager – 5 South/Progressive Care unit Recruited to serve as interim manager of 36 bed-medical-surgical progressive care unit
12/2001 – 01/2002	Indiana University Health – Indiana University Hospital, Indianapolis, IN Interim Clinical Director – Adult Critical Care Center Recruited to serve as interim director of five critical care units
03/1992 – 05/1995	Indiana University Health – Indiana University Hospital, Indianapolis, IN Clinical Nurse Specialist – Critical Care Developed and implemented 1st CNS position at Indiana University Hospital
01/1992 – 05/1992	Indiana University School of Nursing – Indianapolis, IN Instructor AD Nursing Program
08/1991 – 03/1992	Indiana University Health – Indianapolis, IN Staff Nurse – Adult Medical/Surgical/Telemetry Unit
12/1989 – 08/1990	Riverside Methodist Hospital – Columbus, OH CNS Cardiovascular/Cardiology
12/1987 – 12/1989	Riverside Methodist Hospital – Columbus, OH Critical Care Education Coordinator
05/1984 – 12/1987	Middletown Regional Hospital – Middletown, OH CNS – Critical Care Developed and implemented 1st CNS position
08/1983 – 05/1984	College of Nursing & Health, University of Cincinnati, Cincinnati, OH Graduate Student Assistant
08/1980 – 05/1984	Miami Valley Hospital – Dayton, OH Staff Nurse – Critical Care
08/1979 – 05/1980	Indiana University Health – Indiana University Hospital – Indianapolis, IN Staff Nurse – Surgical Intensive Care Unit

PROFESSIONAL AFFILLIATIONS

HONOR ORGANIZATIONS

- 1984 - Present Sigma Theta Tau National Honor Society for Nursing

PROFESSIONAL ORGANIZATIONS

- 2009 - Active American Organization of Nurse Executives (AONE)
- 2012 - Active Midwest Nursing Research Society (MNRS)
- 1993 - Active Local Chapter AACN (CIC-AACN)
- 1980 - Active American Association of Critical Care Nurses (AACN)

CERTIFICATIONS AND LICENSURE

- 1980 - Active Registered Professional Nurse, OH (21-16-9797)
- 1979 - Active Registered Professional Nurse, IN (28075406)

PUBLICATIONS

- Duffy JR., Kooken WC., Wolverton CL., Weaver MT. (2012) *"Evaluating Patient-Centered Care Pilot Study Testing Feasibility of Electronic Data Collection in Hospitalized Older Adults"*, Nurs Care Qual Vol. 00, No. 00, pp. 1–9 (Accepted for Publication 2012).
- Juneja R., Roudebush C., Kumar N., Macy A., Golas A., Wall, D., Wolverton, C., Nelson D., Carroll J., & Flander, SJ. (2007) "Utilization of a Computerized Intravenous Insulin Infusion Program to control Blood Glucose in the Intensive Care Unit", *Diabetes Technology & Therapeutics*. 9 (3) 232-240.
- Hobbs T., Wolverton, C., & Clevenger K. (2008) "Lift Team Technologies Elevate Positive Outcomes". *Nursing Management*. 38 (7). 50-52.
- Ostermeier L. Wolverton, C. "Retention: for better RN retention, as and you shall receive" *Recruitment and Retention Monthly*, HCPro, Inc. publication January 2008.
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- Swearingen OL, Howard CA. (1996), *Photo-Atlas of Nursing Procedures, 3rd edition.* Wolverton, CL (Chapter editor: Managing Cardiovascular Procedures).
- Wendorf, JS. Myers M. Sharp, T. Wolverton, C. (1996). "Resource utilization and implementation of cost reduction strategies for CABG surgery at Indiana

University Medical Center: An interdisciplinary analysis, *Journal of Cardiothoracic Surgery*.

- Nichols, KS. Wolverton, CL. (1991). "Outcome Criteria for Patients With Implantable Defibrillators," *DCCN*, Sept/Oct 1991, 10 (5) 294-304.
- Friricks, K. Westrope, RA., Wolverton, CL. (1984). "Preparing for the Future: A Prospective Stance in Acute Stroke Care," *Nursing Management*, June, 19(6), 64-76.
- Vulhop, L. Sommers, MS, Wolverton, CL. (1984) "Containment of Fecal Incontinence by Use of a Perianal Pouch," *Journal of Enterostomal Therapy*, March-April, 1984.

AWARDS & RECOGNITION

- Award, ***Clinical Excellence/Service Excellence***, August 2001, Indiana University Health ***Cover Story,*** *Fest, G.* ***(2004).*** *"Up to the Task, Evolution of Critical Care Nursing", Nursing Spectrum*, Midwestern Edition, August 2004, pp8-10.
- ***Salute to Nurses Award, May 2004-2010, 2013-2015*** Indianapolis Star, supported by Indiana State Board of Nursing, In recognition of commitment and compassion for the nursing profession.
- ***Excellence in Management Award; 2002***. National Circle of Excellence Award, American Association of Critical Care Nurses. Prestigious award given to nurses who make outstanding contributions to critical care patients and families.
- Team Performance Award, ***Service Excellence***, November 2004, Indiana University Health
- Gold Performance Award, ***Clinical Excellence***, February 2003, Indiana University Health
- Gold Performance Award, ***Clinical/People/Service***, August 2001, Indiana University Health
- Silver Award, ***Magnet Preparation Site Visit***, August 2004, Indiana University Health
- Silver Award, ***Excellent Feedback/Manager,*** February 2004, Indiana University Health
- Silver Award, ***Shining Magnet Star,*** November 2003, Indiana University Health
- ***Letter of Commendation***, IU School of Nursing, June 2003. Lecturer "Achieving Magnet Recognition".

PROJECTS/ACTIVITIES/COMMITTEES

- ***Fellowship Intensive***, Academy Fellow, Health Care Advisory Board, Washington, D.C. 2003-2005, one of twelve Indiana University Health leaders chosen for the fellowship

- ***Lift "Team" Ergonomics Proposal 2004.*** Approved by Indiana University Health, Operations committee Dec 2004; implemented pilot IUH May 2006**, expanded system-wide (IU/MH)**
- ***Glucostablizer (Glucommander Pilot),*** MICU Indiana University, Excellence in Hyperglycemic Management, **expanded system-wide IU Health**
- ***Magnet Steering Committee***, 2002 – 2008; subcommittee – Magnet Magic Survey's 2002-2004; original designation; re-designation 2009
- ***Capital Committee*** – Nursing and Patient Care Services
- ***Quality Committee*** – IUH
- ***Healthy Work Environment Committee***
- ***Strategic Workforce on Aging Committee***
- ***Diabetes PI Committee*** – Indiana University Health 2007 to current date
- ***Line Care Team*** – Pilot implementation January 2008
- ***Staff Nurse Council***
- ***MICU Collaborative Care Committee***
- ***SICU Committee***
- ***SICU Quality Committee***
- ***IUH Critical Care Committee***
- ***IUH Code Blue Committee***
- ***Service Excellence Committee***
- **I*OPA* –** IUH lead contact
- ***Cerner (EMR)* –** active in several work groups related to clinical implementation
- ***Operating Improvement Plan*:** Productivity Management; Daily Staffing Tool Redesign
- ***IU Simon Cancer Center (IUSCC):*** participate in several operation groups related to IUSCC ICU construction and implementation
- ***IUSON Adjunct Faculty:*** Serves as a **preceptor for graduate level nursing students** in the Clinical Nurse Specialist Program at IU School of Nursing; also serves as a project facilitator for graduate level nursing students.
- ***Contribution Management***; Nursing liaison and lecturer for rollout
- ***Synergy/CAP*** sub-committee linking Contribution Management to Synergy Model
- **CAP (Career Advancement Program*)*** – "Coach" for staff applying for promotion
- ***Excellence of Clinical Outcomes in the ICU Regional Collaborative;*** April 2003- April 2004, MICU, IU, Indiana University Health
- ***Transformation of the Intensive Care Unit (TICU)*** ; 2004-2007; National Outcomes Initiative, Indiana University Health
- ***Non-Invasive Esophageal Doppler Trial/Study***, MICU, IU, November 2004
- ***PICC Proposal***; July 2004 – current date; Cost analysis project, Quality patient care initiative, in progress.

RESEARCH

- ***Tight Glucose Control***: Retrospective Blood Analysis Study, In progress Feb 2008
- ***IRB Proposal;*** "Evaluation of Computer-Based Program in the Management of Glycemic Control in Acute Care"; December 2004 – in progress; Collaborative effort with physicians, nurses, pharmacy, across Indiana University Health
- ***"The Effect of a Sedation, Analgesia, and Daily Wakeup Protocol on the Duration of mechanical Ventilation in Critically Ill Patients,*** January 2002-March 2002; CHP, IUH.
- ***Grant:*** IUMC Cost Containment Grant, "Interdisciplinary analysis of resource utilization and implementation of cost reduction strategies for coronary artery bypass surgery at Indiana University Medical Center". Co-investigator, December 1994 – March 1995.
- ***Thesis:*** Impact of Mode of Reporting on Completeness of Information Transmitted During Change of Shift Report, June, 1984, University of Cincinnati, College of Nursing & Health, Cincinnati, OH.

PRESENTATION/LECTURES

- Institute for Credentialing Innovation Tenth Annual Magnet Conference October 4th-5th, 2006. "Strategies for Keeping Nurses at the Beside.
- Daimler/Chrysler/GM managed care Meeting, December 2004, Topic "Magnet Nursing Recognition", December 9th, 2004.
- Pulmonary Critical Care Medicine, December 21, 2004; "Transformation ICU" VHA project presentation.
- Endocrinology Grand Rounds, December 7th, 2004; Use of Glucommander in the ICU; presented with Sam Flanders, MD Sr. VP Quality Medicine, Indiana University Health
- CCRN review course, Adult Critical Care, IU Hospital, Indiana University Health, repeated lecturer 2002-2004, "Pulmonary Review: Part I and II"
- Cardiovascular Nursing Update March 2000, "Putting the Puzzle Together: Physical Assessment for Nurses", Indiana University Health
- Cardiovascular Nursing Update (Oct 1998). "Cardiomyopathy"
- Cardiovascular Nursing Update (Oct 1997). "Noninvasive assessment of Hemodynamics: Investigating Without Invading."
- Topics In Critical Care (April, 1994) "Cardioversion: chemical verses electrical"; "SV02 Monitoring: Clinical Applications"
- Topics In Critical Care (April, 1993); "Hemodynamic Waveforms: Making It Simple"; "Psychological Adaptation After ICD Implantation"
- NCLEX (State Board Review for Nursing), Cardiac and Pulmonary review, four-hour session, IU School of Nursing, January 1995.
- Assessment and Management of Med-Surgical Crisis, presented at Med/Surg Nursing: A specialty of its own, April 1991. Riverside Methodist Hospital, Columbus, OH.

- Numerous "In House" lectures covering a wide range of topics:
  - Hemodynamics (Basic/Advanced/Waveforms)
  - Cardiovascular/Cardiology (Assessment, Pharmacology-EKG – basic/advanced/12 lead, Cardiomyopathies, CHF, Angina, Pacemakers, ICD)
  - Pulmonary (Assessment, SV02, Blood Gas Analysis, ARDS, Pulmonary Edema, Pulmonary Emboli)
  - Shock
  - Endocrine
  - Neuro (Assessment, CVA, ICP, CEA)
- Poster Presentation: Patient Care Research Conference 2003, Indiana University Health, "Nosocomial Pressure Ulcer Rate in Critical Care: A Performance Improvement Project.
- Poster Presentation: Impact of Mode of Reporting…Nursing Research Symposium – VIII (1989), Riverside Methodist Hospital, Columbus, OH.
- Poster Presentation: Impact of Mode of Reporting…4th Annual Research Symposium (1984), Miami Valley Hospital, Dayton, OH.